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ISSUE 32 ■ DECEMBER 1993

AMIGA SHOPPER

SHAREWARE COLLECTION - VOLUME SIX

ACC Hardware Programming Guide
Fully-functioning assembly language tutorial package, including assembler, worked example files, step-by-step guide, plus advanced hints and tips

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Comprehensive game map creator/ editor for all game designers

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Full listing of the latest version of our AMOS paint package tutorial – PLUS runnable compiled version

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12



Indi DIRECT MAIL

THE JAKKI BRAMBLES COLUMN

Well OK then you Mums and Dads, it's that time of the year again when letters to Santa are coming your way. We get a lot of phone calls at this time of year from you guys because it really isn't that easy to decide which of the mega bundles to buy. So this month we have an easy guide to help you make that really important choice.

Amiga 600 Single Drive - The ONLY home computer for **less than £200**. Suitable for the child fed up with paying out £40 for software for their Megadrive (software available from £9.99) or for the first time buyer. There are hundreds of software titles available including games, education, word processing, home accounts etc. Games available include strategy / role playing, titles where imagination is more important than aggression, learn to create animations not zap aliens aimlessly. **Age Group 8 - 13**

A600 Hard Drive - A more serious version of the above. The hard drive saves repeatedly loading and swapping floppy disks. Suitable for serious games players and applications such as database management for a student or home office environment. The Epic Pack is particularly useful for a foreign language orientated student. **Age Group 12 +**

Amiga 1200 Chartbusters - Only the really lucky child will receive this as their first computer. Its state of the art latest Amiga technology made it the computer that most kids aspire to. Its fast 32 - bit technology makes it the choice of Amiga enthusiasts who want not only the ultimate in games playing but also serious applications. You can expand this computer through the addition of hard drives, extra memory, accelerator boards whatever the option most suitable for producing any number of serious applications. Want to be a graphic artist, video producer, film director, cartoon animator, musician, mathematician, designer..... the only limitation to the machine is your imagination. **Age Group 10 - 100**

Amiga 1200 Desktop Dynamite - As above but but with some serious applications included in the package. The perfect solution for the student. You want him or her to have a computer to produce school work using quality Desktop Publishing software, he / she wants a dynamic games playing machine. This gives both of you what you are looking for. The software alone is worth over £300. **Age Group 14+**

Amiga CD32 - The choice for existing Amiga owners looking for the latest product in the range or for the dedicated console owner. Knocks the Sega for six with its State - of - the - Art graphics. (Colours on screen Sega = 64/ CD32 = 256 or 262,000) and processing speed (Sega = 16-bit / CD32 = 32-bit) To you or me this means that people who write the games can now display more colours on screen and the action can be even faster. Also be aware this is also a Compact disc player with full four voice stereo sound so you can play your favourite CD's when the kids are at school. Connects to standard TVs and most hi - fi's. **Age Group 10+**

I hope this info assists. With Commodores help I'm certain that there will be thousands of happy smiling faces on Christmas Day, but if you're still not sure give Indi a call they will be delighted to help.

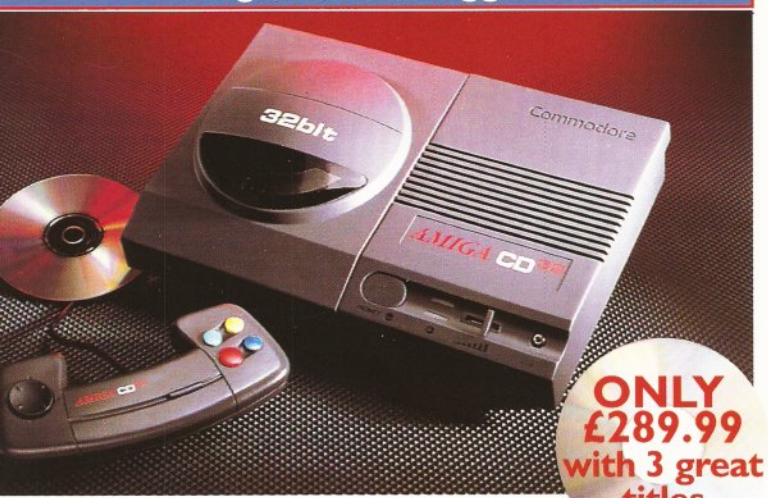
Seasons Greetings.

Jakki Brambles

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AMIGA CD32

FREE SOFTWARE
Lemmings, Oscar, Diggers



The exterior may be sleek but lurking inside the Amiga CD32 is a technological wonder. At it's heart is the mightily powerful 68EC020 processor from Motorola. This contains the 32 - bit technology which has made the Amiga 1200 a runaway success throughout Europe.

Alongside it is Commodore's unique custom AGA (Advanced Graphics Architecture) chipset - comprising three chips nicknamed Paula, Lisa and Alice.

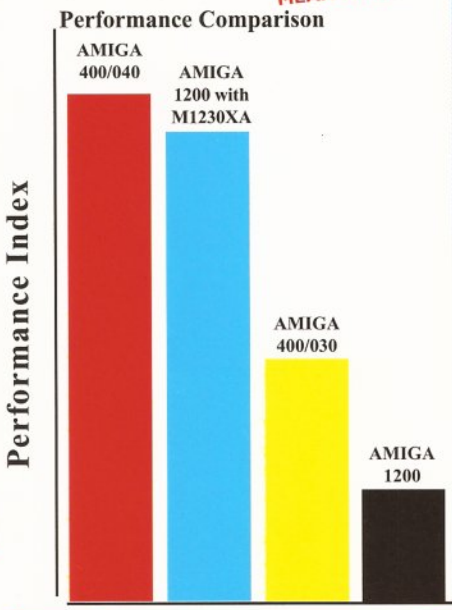
Together they make Amiga CD32 and awesome powerhouse of high speed graphics and stunning sound capabilities.

In fact, the machine can display 256,000 colours on screen (compared to Sega's Mega CD which can only display 64) and has a total colour palette of 16.8 million colours. Amiga CD32 also comes with a chunky 2 Meg of RAM (that's15 times more than Mega CD) and a double speed drive.

SPECIFICATIONS:

* 14 MHZ 68EC020 processor
* 2 Megs 32 - bit chip RAM
* 2 Joystick ports/controller ports
* S- video jack
* Composite video jack
* RF output Jack
* Stereo audio jacks
* Keyboard connector/ auxiliary connector
* Full expansion bus
* Headphone jack
* Headphone volume control
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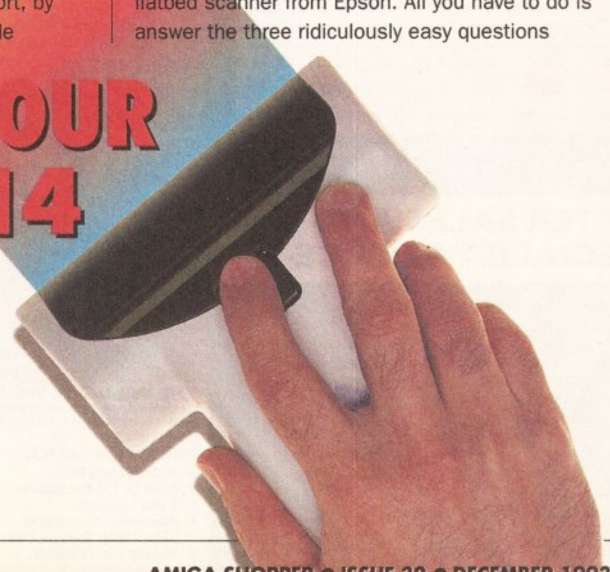
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AMIGA SHOPPER
ISSUE 32 • DECEMBER 1993

IN THIS ISSUE



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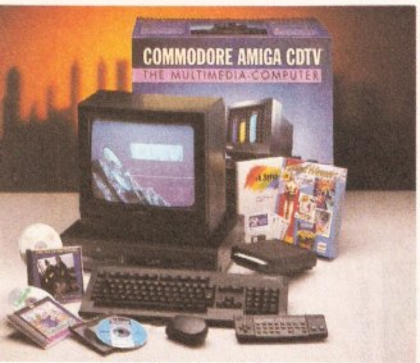
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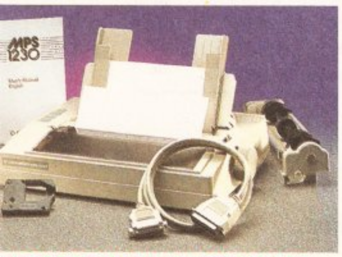
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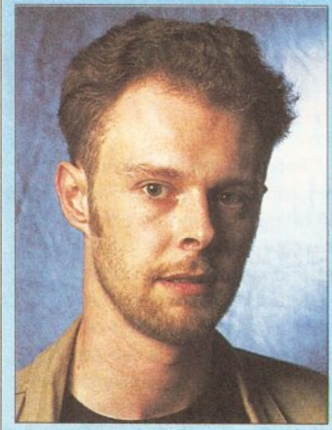
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COMMENT



The editor, Cliff Ramshaw, offers his penny's worth...

We're beginning to see the benefits of Commodore's recent policy. Their decision to release Amigas with at least a 68020 processor has enabled software manufacturers to produce packages with far more power than we've been used to.

It makes financial sense for developers to aim for the lowest common denominator. The introduction of the A1200 and the A4000 has raised this base level, and therefore the quality of the software. It's not that these new programs won't work on older and slower machines, just that they won't work as well – but that's progress.

Packages such as those in the story to the right, and the paint package *Brilliance* (which we examine *in detail* on page 28), really do represent a new wave of serious Amiga software. We'll need a lot more like them before we can say that the Amiga is as well served in the business market as the Mac or PC, but what a hell of a start.

Professional software – the new power generation

The imminent release of two professional-level software packages looks set to spark off a much-needed renaissance of serious Amiga software. Both packages come from American developers, and both are designed to provide the kind of power more usually enjoyed by Macintosh and PC users.

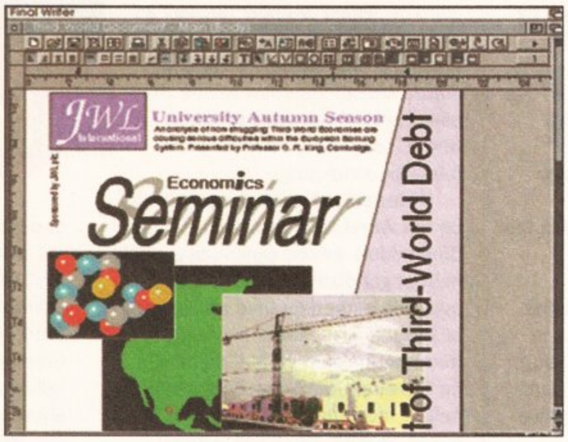
For years now Amiga users have bemoaned their machines' inability to make any sort of impact in business computing. The Amiga has proved immensely popular with video workers, particularly in America, when used in conjunction with NewTek's Video Toaster, but also in Europe and the UK. Yet in other commercial markets it has been noticeable by its absence. The situation has been especially galling because of the precedence of the IBM PC, an inferior machine in just about every respect. But the undeniable fact has always been that software for the PC is of a much higher quality.

This situation may well be about to change.

The first of the two would-be "killer applications" comes from SoftWood. It's a word processor called *Final Writer*. SoftWood are the company behind *Final Copy II*, a word processor generally considered, along with Digita's *Wordworth*, to be one of the best available for the Amiga. *Final Writer* isn't intended as a replacement for *Final Copy II*, but rather as an addition to the range, with *Final Copy II* being moved down a peg and *Pen Pal* remaining the company's entry-level program.

One of *Final Writer*'s biggest features is its ease of use. Most of its functions can be accessed by mouse clicks on the sort of tool bar familiar to paint package users. These tool bars are customisable, and it's possible to switch easily between several. Complex formatting macros can also be created and used to speed up the layout of text.

The package comes with a number of drawing facilities, and the ability to import graphics in IFF and EPS formats. Both are displayable on-screen, and can be cropped or scaled without loss of resolution.



Will SoftWood's Final Writer change the way that the Amiga is viewed in the commercial computing sector?

Graphics and text can also be rotated.

Final Writer's printing options are also extensive, with the ability to send PostScript fonts to any printer. When used in conjunction with a PostScript-compatible printer it can also scale documents and print them with crop marks.

The package comes with 100 clip art images, all in EPS format, which means they are scalable, and more than 110 fonts. It will cost £129.95 – a fraction of the price of similar packages on the Mac or PC – and should be available any day now.

The second package comes from Soft-Logik, who have been fighting with Gold Disk for supremacy in the Amiga desktop publishing market for years. This time Soft-Logik are not only claiming that their latest product, *PageStream 3*, is better than Gold Disk's *Professional Page*, but also that it's better than Quark *XPress* and Aldus *PageMaker*, the two industry-standard DTP programs in use on the Mac.

PageStream 3 is being touted not as an upgrade but as a completely new program, containing many new features that users of earlier versions have requested. It is aimed not only at hobbyists – many of whom may well be better off with a cheaper document processor such as *Final Writer* – but also at desktop publishing professionals. To this end it gives the user great flexibility in the creation of colour plates, will operate with CMYK, HSV and RGB colour models, and includes support for Pantone colours – Pantone being a system that guarantees publishers much more accurate colour reproduction than can be achieved with the cheaper CMYK standard.

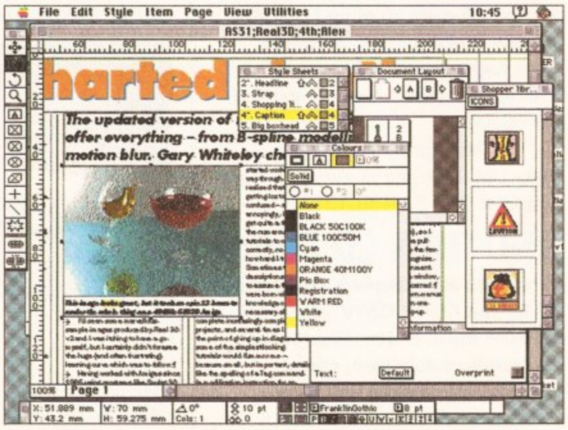
The user interface of *PageStream 3* has been much improved, giving the user a choice of several different toolbox layouts, and providing draggable toolboxes for fonts, colours, pages, macros and styles.

Soft-Logik are making no promises about a release date, but the latest estimate is some time in December, with a US price tag of $395. It will be distributed by Silica ☎ 081 309 1111 and Meridian ☎ 081 543 3500.

Final Writer will be distributed by SoftWood Products Europe ☎ 0773 836781. Watch for full reviews of both packages in *Amiga Shopper* as soon as they are available.



Soft-Logik's PageStream 2. Will its successor really have the power to become the new DTP standard?



And here is its main competitor on the Mac – Quark XPress, the program used to create this magazine.

Cheaper Caligari

The Caligari Corporation have made dramatic price cuts to their 3D modelling packages in a bid to penetrate the market dominated by RealSoft's *Real 3D*.

Their entry-level package, *Caligari24*, is to sell for £99.95, while the package aimed at professionals, *Caligari Broadcast*, is priced at £399. Both are distributed by Meridian ☎ 081 543 3500.

XCAD PRICE DROP

As part of a Christmas promotion, *XCad 2000* has been reduced in price to £79, while *XCad 3000* drops to £249. For more details call DML ☎ 081 977 1105.

GET INTO CD-ROM

Users of Workbench 2.04 or higher can now plug into CD-ROM technology thanks to ASIMWARE's new file system.

Called *Asim CDFSv2.0*, the software will enable you to access a CD-ROM drive as an ordinary AmigaDOS device – over 20 SCSI-connected drives are supported. In addition, it provides support for the Kodak PhotoCD standard and enables the drive to be used as an ordinary CD player. A CD-ROM containing disks 101 to 900 of the Fred Fish collection is provided as part of the package, all of which sells for £49.99.

Asim CDFSv2.0 is distributed by Micro-PACE UK ☎ 0753 551 888.

SOFTWARE PC EMULATOR

***PC Task*, the Australian software-based PC emulator, is to be distributed in the UK by Meridian for only £49.95.**

The program will run on all Amigas, its performance depending on the power of your machine. It is fully multitasking, and enables you to transfer files between MS-DOS and AmigaDOS. Using it, you will be able to run most PC applications.

Its features include: emulation of up to two floppy and two hard disks; support for high density drives; MDA, CGA, EGA and VGA screen modes with up to 256 colours; support for CD-ROM; and serial and parallel port emulations.

Meridian ☎ 081 543 3500.

MORE SPEED FOR A4000/030S

The Afterburner accelerator from Dutch-based Eureka is claimed to more than double the speed of an A4000/030.

The card comes with a Motorola 68030, including a memory management unit, clocked at 50MHz, and has space for a maths co-processor. It includes a local memory bus for the addition of up to 525Mb of 60ns 32-bit SIMMs, providing much higher memory access rates than are possible on an unmodified A4000/030.

The Afterburner A4050/030 costs DM 846, and is available from Eureka ☎ 010 31 436 13742.

ANOTHER CD DEMO

Almathera are releasing *The Demo II CD* for the CD32, CDTV and A570 CD-ROM drive. It contains games, PD demos, music files, sound samples, IFF images and three versions of Workbench. It costs £19.95. Call Almathera on ☎ 081 683 6418.

Huge computer show imminent

Drenched in neon-bright computer graphics, sonically soaring sound effects, electro-music, TV cameras, radio mikes, full motion video and all the latest techno-wizardry, the Second Future Entertainment Show is likely to be the closest you'll get to cyberspace.

Organised by the publishers of good ol' *Amiga Shopper* (as well as about 30 other magazines, including *Amiga Format, Amiga Power* and *Future Music)* the show will be *the* place to be if you want to know what's happening now and in the future of computing.

Naturally, of special interest will be the World Of Amiga section, where Commodore will be exhibiting a whole host of goodies destined to delight even the most hardened and cynical of technophiles. Other big names from the Amiga marketplace who'll be there, showing new products and selling favourites at unbeatable prices, include 16/32 PD Library, Database Direct, Datel Electronics, Digita International, Domark, Electronic Arts, Future Zone Stores, Gasteiner Technologies, Kador, MD Office Supplies, Mail Order Express, PD Selections, PD Soft, Power Computing, Silica Shop, Siren Software, Snap Computer Supplies, Software Demon, Supra, WTS Electronics and Wembley Electronics.

The *Amiga Shopper* team will be there, along with the people who put together Future's other computing magazines, ready to offer advice and submit to interrogation – or something....

But that, as we're fond of saying, isn't all. The TV programme *GamesMaster* will be broadcast live from the show on the Thursday evening, while the BBC's Radio One will be going out live throughout the show's proceedings.

The show runs from Thursday 11 to Sunday 14 November at London's Olympia. Entry is by ticket only, so you'd better get your skates on and ring the hotline number ☎ 051 356 5085. A single ticket costs £6.95, or you can get a family ticket (which admits four) for £24.95.

And here are the winners of the competition we ran last month. Each will be receiving a free ticket to the show, so if you're not listed here, better dial that number now: A C Murdoch of Leigh-on-Sea in Essex (who came up with our favourite reason we're so good to you: "When you're shell-shocked good and proper, the remedy's *Amiga Shopper")*; Richard Rogers of Royston in Herts.; M B Peden of Potters Green in Coventry; Nicholas West of London SE1; Daniel Calstor of Sidcup in Kent; S J Trow of Stafford in, er, Staffordshire, isn't it; R Frost of Westbury-on-Trym, near Bristol; Chris Jackson from Chesterfield in Derbyshire; John Oakes of Shotton in Clwyd; Richard Easten of Newcastle upon Tyne; David Turner from Sutton in Ashfield, Notts.; Alan Wightman from Dunbar in East Lothian; M Crossley from Chesterfield, which is still in Derbyshire; David Parker of Cambridge; P Hope from Bedminster in Bristol; Vincent Stewart of Perth in Scotland; Jason Worswick from Bolton in Lancs.; Silvia Risby of Oxford; J Donnelly of Glasgow; and H Watkins from Cardigan in Dyfed. Congratulations. See you there.

Star dotty over new printers

You might think that the age of the dot matrix printer is gone, what with the proliferation of inkjets and the ever-falling prices of lasers. Star, however, expect 500,000 dot matrix printers to be sold in the next year, and are strengthening their LC range to make sure they get a good share of the sales.

Two colour models – the LC24-30 and LC24-300 – firm the LC series into what Star believe is a range with something for everyone.

The LC24-30 is a £351 colour dot matrix that comes with a 30 page sheet feeder. It will automatically change its print emulation to that required by the controlling computer, and features a special zoom mode that will reduce A4 documents to A5 or A6 size.

The LC24-300 will print more quickly (up to 264 characters per second) and quietly, and is able to switch between single sheet and continuous stationery modes. It supports Epson LQ860, IBM ProPrinter and NEC Graphics emulations, automatically switching as needed. It costs £422.

Contact Star on ☎ 0494 471 111 for more information.



Star Micronics highlight lower operating costs as a big benefit of their LC colour dot matrix printer range.

COMMODORE UNWRAP XMAS BUNDLE

This year's Christmas bundle from Commodore demonstrates their faith in the A1200's capabilities as a productivity machine.

As well as a batch of games – *Oscar* and *Dennis* – it will be sold with *Deluxe Paint IV AGA, Wordworth* and *Print Manager*, all for £349.99. Commented the company's joint managing director David Pleasance: "It's the broadest possible introduction to the vast possibilities of the Amiga world."



The A1200 Desktop Dynamite bundle – more bangs for your bucks.

SPEAK SPANISH



Whether you're a student, tourist or business type, teach yourself Spanish – written and spoken – with LCL's* Micro Spanish. *It will take a beginner through to GCSE level, includes sampled speech, music, animations and stills, and costs £24.99 from LCL ☎ 0491 579 345.

Serious muscle for CD32

The first expansion card for the CD32 has been announced, and it looks likely to turn the console into a machine to be reckoned with.

The CD32 Expansion Board from Microbotics will, when fitted, add the following capabilities: a serial port, a parallel port, a floppy drive port, an IDE hard drive interface, space for up to 8Mb of memory expansion, an MPEG socket (enabling a full motion video unit to be added) and a Parnet cable, meaning that the machine will be controllable via another Amiga with a keyboard.

Microbotics' board will be sold by Indi Direct for £139.99

Also new from Microbotics are two expansion cards designed for the A1500/2000/3000/4000 Amiga machines. The first, the NX2000, enables Amigas to be connected in a network run under the Envoy peer-to-peer protocol. It will cost £79.99.

The Delta 2000 Expansion Board will provide your Amiga with a further two serial ports, one parallel port, space for up to 8Mb of RAM, a SCSI-2 hard disk interface, an IDE hard disk interface and a two channel MIDI interface. The price will be £129.99.

The final Microbotics board, for A3000s and A4000s only, is called the Delta Z3. It provides all the same facilities as the Delta 2000, but with a network interface and space for 4096Mb of memory. It is set to sell for £399.99.

All cards will be available from Indi Direct Mail ☎ 0543 419 999.

New Citizens boost printer population

Whether you're after a low-cost dot matrix or a high-end laser printer, Citizen's two new launches should satisfy your requirements.

The Swift 200C is the latest addition to the company's Swift 2 range of 24-pin dot matrix printers. It's a colour printer that can handle multi-part stationery, cut sheet, continuous paper and overhead transparencies.

The Swift 200C's speed in draft mode is 180 characters per second (at a pitch of 10 characters per inch) or a really quite zippy 216 characters per second (at a pitch of 12 characters per inch). Six fonts are available in letter quality mode.

The Swift 200C supports three emulations: Epson LQ500/850, IBM Proprinter X24e and NEC P20. It has a recommended retail price of £328.

Citizen's ProLaser 6000 marks a first for the company – not only is it their first laser printer, but it's also the first to be available directly from Citizen (☎ 0800 525686). It comes with 1Mb of memory and built-in HP LaserJet III, Epson FX-850 and IBM ProPrinter XL-24e emulations. Eight scalable fonts are also provided. The ProLaser 6000 has a recommended retail price of £1,173, but is available direct from Citizen for £657.



The latest addition to Citizen's Swift 2 range, the Swift 200C is a low-cost 24-pin colour dot matrix printer.

QUANTUM DRIVES FOR AMIGA 1200

Siren Software are selling the first 2.5-inch Quantum hard drives that are compatible with the A600 and A1200.

Quantum drives are acknowledged to be some of the fastest around. They boast a 4Mb per second transfer rate with a seek time of 4ms. They are available from Siren in sizes from 85 to 256Mb, costing £193.49 and £383.49 respectively. They are supplied with fitting instructions, an IDE cable, screws and Workbench. Siren Software ☎ 061 724 7572.

Top titling

Montage24* is a new 24-bit titling package from Innovision Technology, makers of *Broadcast Titler II.

Among its features are the ability to anti-alias text to the background on which they are placed, create transitions, and use 24-bit images as backgrounds. It comes with eight scalable fonts, and can import PostScript and Compugraphic fonts with the addition of a PostScript module. Text effects that can be applied include variable transparency, gradient colour fills, embossing, soft shadowing, outline and ordinary shadowing.

Versions are available that are compatible with AGA screens, Opalvision, GVP's IV-24 and the Video Toaster. It is distributed in the UK by Meridian ☎ 081 543 3500 for £329.95, and Micro-PACE UK ☎ 0753 551 1888, who have yet to fix a price.

SHOW BUSINESS

A list of computer shows happening in the near future:

- Thursday 18th to Sunday 20th November – Second Future Entertainment Show. ☎ 051 356 5085.
- Friday 19th to Sunday 20th November – the 8th Christmas International Computer Show. Wembley Exhibition Centre. ☎ 0222 512 128.
- Sunday 5th December – the 9th annual Christmas Computer Show of the Nottingham Microcomputer Club. ☎ 0602 621 153.
- All Formats Computer Fair. November 6th Oxford, 7th Brighton, 13th West Midlands, 20th London, 21st Portsmouth, 27th North West, 28th Bristol, December 4th Leicester, 5th Washington. ☎ 0608 662212.

A SERIAL KILLER

Amiga owners searching for a means of connecting to the real world can rest easy now that Applied Systems Group have announced their high performance serial card.

Called Seriox, the card will supply your Amiga with two or four additional serial ports at speeds between 300 and 38,400 baud. Prices start at £94. ASG ☎ 0652 688330.

Harlequin deal

There's a special offer on at the moment for people interested in buying Xi Electronics' Harlequin Plus 32-bit frame buffer.

Already cheaper than the earlier Harlequin card (and better), the Harlequin Plus is being bundled with MacroSystem's VLAB Y/C framegrabber (itself worth £380).

The whole package, with 2Mb of RAM, is available from Xi Electronics for £1,498. A 4Mb version costs £1,598. XI ☎ 031 229 8428.

TypeSmith upgraded

Desktop publishing aficionados will be pleased to learn of the latest version of *TypeSmith* from Soft-Logik Publishing.

TypeSmith 2 enables the user to create PostScript, Compugraphic and Soft-Logik outline fonts for use in DTP and other applications.

Among the latest version's enhancements are the ability to create bitmap fonts from outline equivalents, to trace bitmaps to create outline versions (meaning you can create fonts from scanned pages), and to take kerning information from one font and place it in another.

TypeSmith 2 also supports hints – a system that improves the clarity of fonts when they're printed at low resolutions or small sizes.

It will be distributed in the UK by Meridian ☎ 081 543 3500 and SDL ☎ 081 309 1111 for £169.95.

FIGHTING THE GOOD FIGHT

Protection from viruses is at hand from the Safe Hex International organisation, who have recently set up a UK virus centre.

The centre distributes a disk called *The New Superkillers*, which contains programs to deal with all of the latest viruses. Furthermore, it collates new viruses from users and liaises with the main Safe Hex International centre in Denmark.

The organisation charges £2 per disk. The money helps reward the creators of the virus killers, and is also to be used to set up a free telephone, fax and bulletin board line that will offer virus advice to UK Amiga owners.

You can get a copy of the disk by sending a check for £2, made payable to Paul Browne, to: SHI Regional Virus Centre UK, 304 Leeds Road, Eccleshill, Bradford, West Yorks. BD2 3LQ.



The Amiga Shopper Shareware Collection volume VI

Here's the full low-down on what you'll find on this issue's packed cover disk.

ACC HARDWARE PROGRAMMING GUIDE

All Workbenches

Want to know how to take total control of your Amiga? Then this package from Amiganuts is the one for you. It's designed to teach absolute beginners the mysteries of assembly language and show you how to use it to access the Amiga's hardware and achieve stunning graphical and audio effects.

This is actually part one in a four disk series from Amiganuts. It deals with the fundamentals of assembly language programming, and then introduces the various intructions you'll be needing. It explains how you can move data around and perform arithmetic, and then goes on to the more involved subjects of loops and subroutines. Finally it deals with the various binary operations assembly language enables you to perform.

The beauty of this package is that you can load in its many examples while you are reading the tutorial text. This means you can see exactly how things are done even as you read about them. In addition, a complete assembler is supplied, so you can assemble into runnable versions not only the example programs but your own programs too. All of this can be done from the environment of the tutorial reading program, giving you a chance to practise your skills as you learn.

IMPORTANT

Once you've dearchived the *ACC Hardware Programming Guide* on to a floppy disk, you need to give this disk the name **M1:**. You can do this by single-clicking on it and selecting **rename** from the Workbench menu.

Alternatively, if you dearchive it to your hard disk or RAM disk, then you must make an **assign** that points to wherever you have placed it. Do this from the Shell. For example, if you have dearchived to a directory called **tutorials** on a hard disk partition called **dh1:**, then you would open a Shell window by double-clicking on the Shell icon and type:

```
assign M1: dh1:tutorials
```

You'll probably want to put this line somewhere in your startup sequence (type **ed s:startup-sequence** to enable you to do so) so that you can run the tutorial whenever you switch on your machine.

Once you've done this, you can get into the tutorial by opening up the **Beginners** drawer and double-clicking on the **Tutorial** icon.

SPECIAL OFFER

The version of the *ACC Hardware Programming Guide* on the cover disk is just one part of a larger package. *Amiga Shopper* has tied up a deal with Amiganuts so that you can get the whole lot at a discount price of £12.60 (including postage and packing) – that's a saving of £3. The other disks move on to more sophisticated uses for assembly language, dealing with such things as opening custom screens, creating sound effects, drawing graphics and animating sprites. To get them, simply send a cheque or postal order for £12.60 payable to Amiganuts at this address: **Amiganuts United, 1 Daffern Avenue, New Arley, Coventry CV7 8GR.**

Note that to qualify for this special reduced price you must include your original *Amiga Shopper* cover disk as proof of purchase – but that won't be a problem, will it, because you'll already have made a back-up copy of your cover disk, won't you?

SOURCE_CODE

All Workbenches

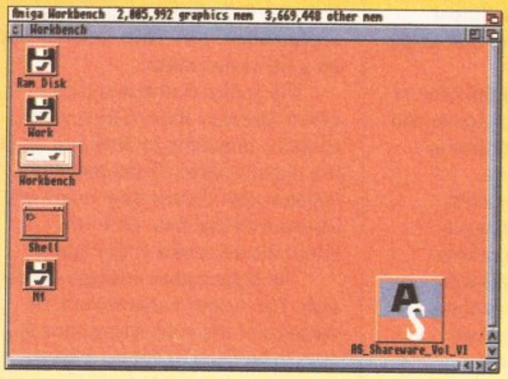
Here you'll find the two programs printed in the Listings section of the magazine (page 61). They're both written in AMOS, and the versions on the disk are in source code format, so you can load them into the AMOS interpreter, examine them to pick up tips, and run them to try them out. Please note that no icons are included for these two programs. Neither of them need dearchiving before use – they're both ready to be loaded directly into AMOS.

MAPSTATION

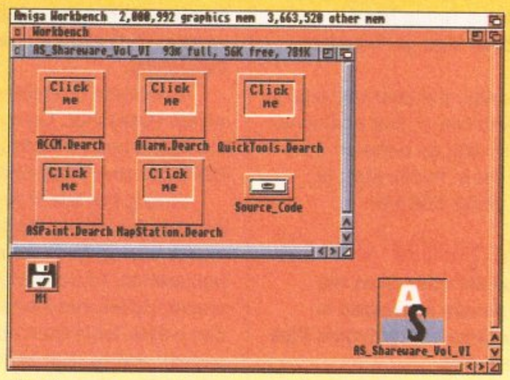
All Workbenches

MapStation is a handy utility that will

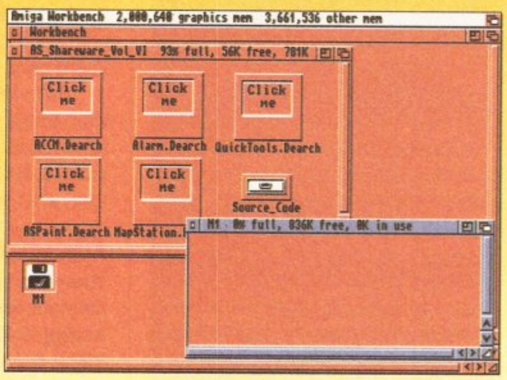
SO JUST HOW DO YOU GET AT ALL THIS



❶ First you should switch on and boot up your machine with Workbench. Then insert the copy that you've made of this month's cover disk. You'll see the **Amiga Shopper** icon appear the screen. Before you go any further you'll also want to have several blank formatted disks available (unlsess you intend to dearchive to hard disk or RAM:) – you'll need something to save the uncompressed software onto.



❷ The next step is to double-click with the left hand mouse button on the **Amiga Shopper** icon. A window for the disk will then open, in which will be displayed the six icons for the software on the disk this month. Apart from the drawer called **Source_Code**, which contains the readers listings from page 61, all of the cover disk files have been compressed with the archiving utility *LhA*.



❸ Let's say that you want to unpack the *ACC Hardware Programming package.* You'll need to have a blank formatted disk ready before you start to de-compress *ACC*. Because *ACC* is programmed to look for files on a disk called **M1,** you need to name this disk **M1** (only in the case of *ACC*, though). Now double-click on the blank disk icon and another window will open on your screen.

VITAL: READ THIS FIRST

The first thing that you *must* do with your cover disk is to protect it from accidents by making sure that it is write-protected. To do this, make sure that the movable plastic tab on the disk is in the open position – that is, you can see through the hole. This means nothing can now be written to the disk, especially viruses. If you don't write-protect your disk and end up with a virus – well, that's your problem.

The next important step is to make a back-up copy of the cover disk – in case any nasty accidents happen while you're busy working with it. The easiest way to go about this is via the Shell. So, open a Shell window and then type the following at the prompt:

```
diskcopy df0: to df0:
```

Your Amiga will now ask you to insert the SOURCE disk (that's the cover disk) in **df0:** and then press the [Return] key to continue.

Your computer will now read some of the information from the disk before another System Requester window appears asking you to insert the DESTINATION disk (that's the empty disk you want to make a copy of the cover disk on). You'll find that you need to swap disks several times – a System Requester window will appear each time, prompting you to insert the appropriate disk.

If you have more than one floppy drive, you can of course copy from one drive to the other by using the following instruction:

```
diskcopy df0: to df1:
```

Right, now that you've made a copy of the cover disk, hide the original in a very safe place and work *only* with the duplicate.

CAN'T READ THE DISK?

We duplicate tens of thousands of disks, so inevitably a very small number will be corrupted – our copiers do carry out stringent quality-control tests, but the occasional duff disk will always sneak through. You'll know if this has happened to your cover disk because either you'll get a System Requester window appearing to tell you that you've not got a DOS disk sitting in your drive, or a System Requester will pop up to tell you just as unhelpfully that a READ ERROR has occurred while one of the programs was de-archiving.

The solution is straightforward. Just send the faulty disk to the address below, enclosing an envelope addressed to yourself for the return of your replacement disk – the padded variety are best – and we'll pay the return postage. The address is:.

***Amiga Shopper* 32**
Discopy Labs
PO Box 21
Daventry NN11 5BU

With the disk please include a brief note saying what the problem is. Also mention what Amiga you're using and the version of Workbench that you are running. A replacement disk should then come rattling through your letterbox within a couple of weeks.

prove a boon to games programmers everywhere. It enables you to construct huge game areas out of smaller "tiles". These tiles are designed separately, usually in 16 x 16 or 32 x 32 pixel blocks, in such a way that they can be joined together, jigsaw-puzzle-wise, to create larger images. The trick is to design tiles that can be re-used in many different areas of your game. The result is a huge game area that takes up comparatively little memory or disk space. If you take a look at just about any games, particularly those that involve scrolling screens, you'll find they makes use of the technique – the repeating background patterns are the giveaway sign.

MapStation takes all the pain out of creating such backgrounds. It enables you to design your tiles and fit them together to create the kind of backgrounds you need. Its fully icon-driven interface makes it a doddle to use.

ALARM

All Workbenches

Alarm is a demonstration program that illustrates the Programming Masterclass tutorial on page 85. It also doubles as a useful Alarm signaller for your Amiga.

In the Masterclass you'll find a step-by-step guide to the techniques used. It shows you how you can keep track of any system resources that your program sees fit to allocate for itself. That's the easy bit, but deallocating them after use has always been a bit of a nightmare – until now. With this useful stack-based approach you can allocate and deallocate with impunity. If you feel reasonably competent in C and want to take things further, then try out this program and turn to page 85 to learn some powerful techniques.

ASPAINT

All Worbenches

Dearchive this to reveal the latest version of Jason Holborn's AMOS paint program. You'll find that there's some source code that you can load into your AMOS interpreter and examine, and also a compiled version that you can run immediately.

The program is really beginning to take off now, with some paint functions having been added. Turn to page 101 for full details.

QUICKTOOLS

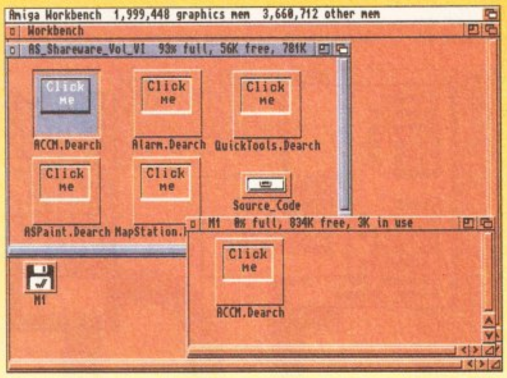
Workbench 2+

This archive contains three of those handy tools that make using your Amiga that bit easier. The first enables you to switch to different directories from the Shell without having to type the full path name. You only need to type as much of the name as necessary to distinguish the directory you want from any other possibilities – quite a time-saver.

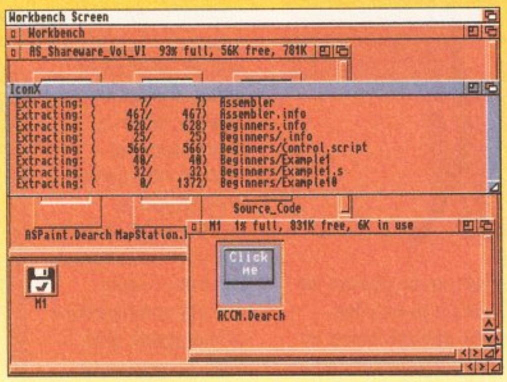
The next enables you to search for a specific file. Give the program the name of the file you're after (or part of the name – wildcards are supported), and it will do the rest.

The final program is a commodity version of the above that you can call up at any time using a hot-key combination. Full documentation for all three *QuickTools* is in the unarchived directory. AS

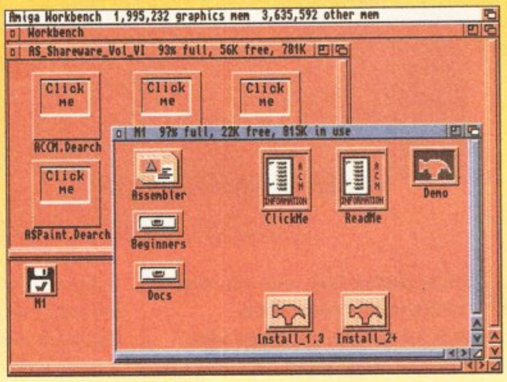
LOVELY SOFTWARE ON YOUR DISK?



❹ Now it's time to dearchive the software. Start by dragging the **ACCM.Dearch** icon from the cover disk window into the **M1** window. To decompress the software all you then have to do is double-click with the left mouse button on the **ACCM.Dearch** icon in the **M1** window. The de-archiving procedure will automatically begin, and another window called **IconX** appears on-screen to tell you how it's going.



❺ In the **IconX** window will be listed all the files as they are extracted from the archive. If you are using an Amiga with only one disk drive then unfortunately you'll have to get involved with a fair bit of disk swapping. A System Requester window will appear each time you need to change the disks around – simply put whichever disk is requested in the Amiga's drive.



❻ Once the **IconX** window has vanished the **M1** window will still appear to contain only the **ACCM.Dearch** icon – that's because the window isn't automatically updated. Click first on the window's close gadget and then double-click on the **M1** icon. The **M1** window will reopen with the packages' icons displayed in their full glory. You can then run the programs or load the files as normal.

Colour your world

Capture the rainbow onto your Amiga! Jeff Walker tests all three Amiga-compatible colour hand scanners, plus a top-flight flatbed.

There are essentially four types of graphic that you might want to transfer from paper to the computer: photographs, illustrations, line drawings, and text. There are many applications in which digitised graphics can be used – desktop publishing, optical character recognition, illustrating, animation and video presentations.

For greatest flexibility and quality you need a colour scanner. Monochrome scanners are fine for scanning small line drawings and columns of text, but the limited number of shades of grey they produce is not honestly good enough to get quality results from photographs and illustrations. Yet colour on its own is not the answer – as we'll see, even at this level results can vary widely.

Each of the products featured here has its strong and weak points, but all scanning software operates in essentially the same way. You select the size and resolution of the scan, set the brightness level, and do the scan. That's all there is to it, and all the packages featured here do the basics perfectly well, so we can concentrate on more important stuff like the quality of the results and extra features that make scanning or saving images simpler and faster.

ALL JOKING ASIDE...

To give you a point of comparison for the scans on these pages, we scanned the same original photo using a professional-standard flatbed scanner, an Agfa Focus Colour Plus. This is capable of up to 800 dots per inch resolution at 8 bits per channel – that is, 256 shades each of red, green and blue. The new model, the Arcus, offers up to 1,200 dpi and 10 bits per channel, comes with Agfa's *PhotoTune* colour management software (for Mac or PC only), and costs a cool £3,745.

How this scan comes out depends on many factors – like the printer's ink and the paper – but theoretically it should be much better than the others...



POWERCOLOUR



Power Computing were the first to launch a colour hand scanner for the Amiga, some nine months ago now. Since then the package has remained essentially untouched, despite the inadequacies that were discussed in the review in *Amiga Shopper* 23. (If you want the details and missed that issue, you can order a copy on page 58.)

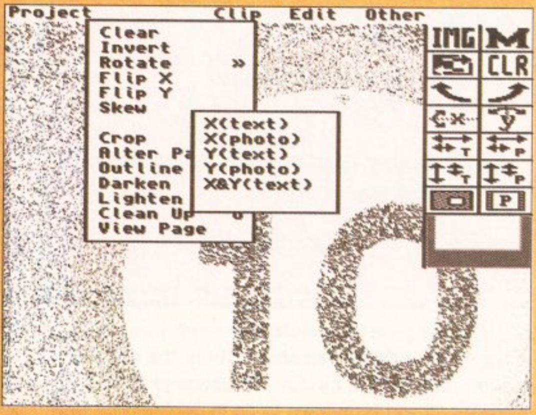
The big problem with PowerColour is that there is no version for the A600 or A1200, the only two hardware interface options being for the A500/Plus side expansion port (with throughport) and an internal Zorro II card for the A1500, 2000, 3000 and 4000. Reacting to the launch of two rival colour hand scanners, Power are now rewriting the software and redesigning the interface so that it attaches to the parallel port, thus making it available to A600 and A1200 owners. But of course all this takes time, and the other packages are available now. Which is a shame, because PowerColour has a lot going for it.

First, it's the cheapest option. The rival hand scanners both have higher specifications – in a nutshell, they "see" more colours – but this doesn't necessarily make them better; compare the example scans of the clown ragdoll on pages 16 and 20 with the PowerColour's on the opposite page. But why should a 4,096-colour scan appear to be as good as one in 262,144 colours?

It's all to do with how the colours you see on your monitor are created. As you know from playing with countless palette requesters, every colour is composed of an amount of red, an amount of green and an amount of blue. When a colour scanner "looks" at a colour photograph or illustration, it doesn't see a lot of different colours; it sees various combinations of red, green and blue. Its scanning head picks up the light it shines onto the original and splits that light into its red, green and blue components. The colour yellow, for example, it would see as containing a lot of red and a lot of green, but practically no blue. It follows that the more shades of red, green and blue a scanner can detect, the better it will "see" colours.

Now, in a "12-bit" scanner such as the PowerColour, each pixel is allocated 12 bits of memory, which means four bits for the red, four for the green and four for the blue.

Okay. Because of the way the binary numbering system works, in four bits of memory you can specify any number from 0 to 15, so that's 16 numbers in total. This means that the PowerColour scanning head sees 16 shades of red, 16 shades of blue, and 16 shades of green. Multiplying those numbers together – 16x16x16 – gives you the theoretical maximum number of colours you can

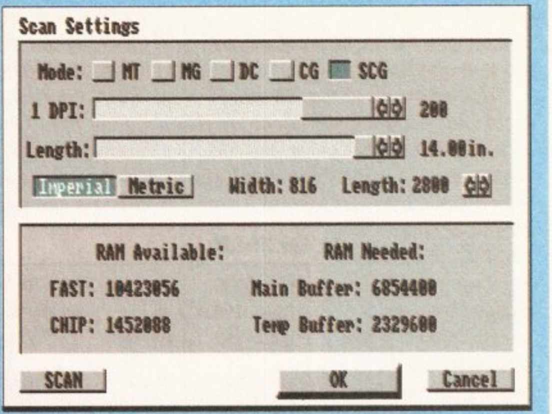


The PowerColour hand scanner software has some rudimentary image-processing features, including scaling, but they are not powerful or accurate enough to replace a dedicated image-processing package.

COLOURBURST



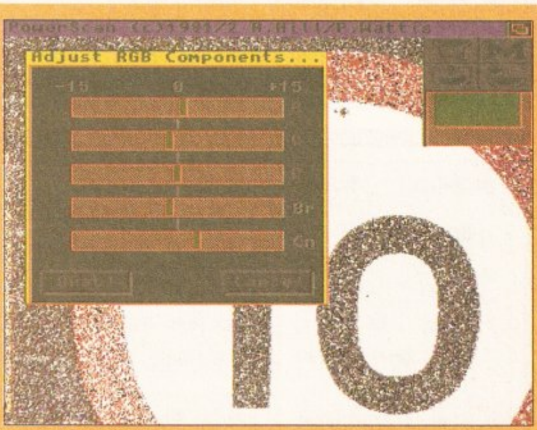
They say speed kills. It certainly kills hand-scanned colour images. So much data has to be read by the scanner head that if you give it too much data too quickly, it will simply ignore it. Because ColorBurst is an 18-bit scanner it has half as much data again to deal with as the PowerColour, so you would think it would be quite a bit slower. Not so. In fact it even feels a little faster. Not fast. But faster. Colour hand scanners are never fast; you always have to pull the head slowly over an image, even when attached to an A4000/040.



Before starting a scan with ColorBurst you have to make sure that the settings in this panel match the settings of the switches on the scanner head.

Migraph, makers of ColorBurst, are also the makers of *Touch-Up*, the scanning software used by a number of monochrome hand scanners, most notably the AlfaScan Plus. *Touch-Up* does things that no other Amiga software can do, so I was initially disappointed upon running the *ColorKit* scanning software to find that all it did was scan, render, crop, and save. But then what else do you want it to do? If you want fancy image-processing features then you need *ImageMaster, ADPro* or *ImageFX*. If you want pretty painting features then you need *Deluxe Paint-AGA* or *Brilliance* – princes all. *ColorKit* is scanning software, plain

continued on page 16



Thank heavens the PowerColour hand scanner software is in the process of being re-written. Working a lot in Low-Res HAM mode in weird palettes, as you have to do at present, really gives you a headache.

have with 12 bits of memory in which to describe each pixel's colour. That number is 4,096.

The rival colour hand scanner packages are 18-bit devices, so they have six bits each for red, green and blue. In six bits you can specify any number from 0 to 63, so these scanners see 64 shades each of red, green and blue, making the theoretical maximum number of colours in 18 bits 64x64x64 = 262,144. On the face of it, this is 258,048 more colours than 12-bits. However, this massive difference in the total number of colours is misleading. The difference is really just between seeing 16 and 64 shades of each primary colour.

To look at on the screen there is hardly any difference between 12-bit and 18-bit colour. The extra six bits of colour information only really come into their own if you intend to process the images in some way – adjust the brightness, the contrast, the colour balance, and so on.

Still, 12-bit colour is nowhere near good enough to produce photo-realistic results – images on the screen that look almost identical to the photograph that was scanned. But the same is true of 18-bit colour; only 24-bits will give you photo-realism or "true-colour". Anything less is the scanner's best approximation to the hundreds of thousands of colours in the original.

There are nevertheless many non-photographic uses for the PowerColour – scanning coloured illustrations, to start with, and that includes airbrushed work, which usually contains far fewer colours than you realise, because airbrushing is essentially a random dithering technique. Graphics artists may find the PowerColour useful for scanning work prepared on paper in order to import it into a painting or image processing package where it can be more easily manipulated and re-coloured. And, of course, there's always the good old black-and-white mode for scanning line drawings.

If this sounds like the kinds of uses to which you would put a colour hand scanner, then the question you have to ask yourself is: do I need 18-bit, or is the 12-bit PowerColour adequate? To find the answer to that question you'll have to read the sections on ColorBurst (above) and AlfaColor (starting on page 17).



Colour photographs scanned with the PowerColour 12-bit hand scanner will always contain a lot of random-looking "noise" because it can see only 16 shades each of red, green and blue. Close examination of this scan reveals thousands of red-, green- and blue-tinted pixels scattered all over the picture.

SHOPPING LIST

PowerColour £239
By Power Computing Ltd, Unit 8, Railton Road, Woburn Road Industrial Estate, Kempston MK42 7PN.
☎ 0234 843388

CHECKOUT PowerColour

Scan Quality
●●●●●○○○○○
Good enough for scanning illustrations, but photo-realistic it ain't.

Ease of Use
●●●●●●○○○○
The ugly and antiquated user interface is in desperate need of an overhaul.

Features
●●●○○○○○○○
It doesn't work with the A600 or A1200 and its basic image-processing and editing features aren't really up to par.

Documentation
●●●●●●○○○○
Good enough to get you started quickly.

Value for Money
●●●●●●●○○○
Good value provided you don't want photo-realistic results.

Overall rating
●●●●●○○○○○
The whole package, software and hardware, needs bringing up to date.

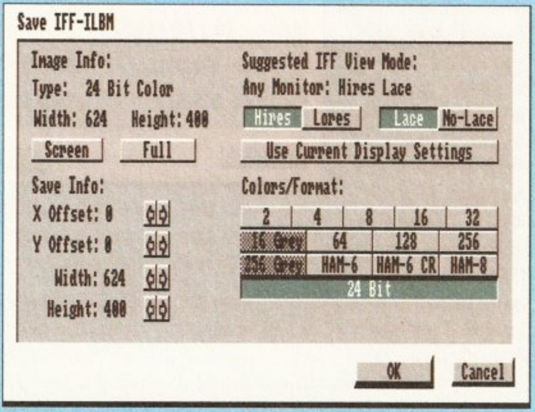
continued from page 15

and simple. Yet in its own realm, it too is a prince.

Not so the interface. Pauper more like. It's the usual 3-inch by 2-inch plastic box that plugs into the parallel port. It works okay, but the ribbon cable between parallel connector and interface is a mere 3in long. When plugged into any Amiga, including the 500/600/1200, there's not enough cable to sit the interface up on top of the Amiga's case, so it has to live round the back and can be flipping awkward to get to.

Because the interface plugs into the parallel port, you have to remove your printer lead from that port – and even though ColorBurst costs £400 its interface has no throughport, so you cannot have both plugged in at once.

The package's saving grace is the rendering section of the software and the quality of the scans it produces. While photo-realism is too much to ask from 18 bits (see the PowerColour review), the colours it produces are bright and vibrant and easily the best of the three Amiga colour hand scanners. Once an image has been scanned, the 18-bit data can be rendered in any screen mode supported by your Amiga, including 256 colours and HAM-8. The original image data is never thrown away, so if you render the image in one mode and don't like the outcome, you don't have to scan the image again before rendering in another mode.



ColorBurst enables you to save scans in every IFF-ILBM format, and you can save a cropped image via the Screen button and the X and Y Offset gadgets.

You don't have to render the image at all, in fact. After finishing a scan *ColorKit* doesn't automatically begin to render the 18-bit data on to the screen, it just sits there waiting to be told what to do. You can save the 18-bit data (in IFF24 format), or render it to fewer colours and then save that. The advantage of this approach is that after completing a scan you don't have to wait while the software renders a HAM image which you can't stop it doing and don't particularly want, which is the case with the rival hand scanners here.

One very important point to bear in mind is that 18-bit colour data takes up a lot of memory. A scan of 4in by 3in at 200 dots per inch, which produces an 800 x 600 pixel bitmap, will require more than a megabyte of memory for the 18-bit data alone. Rendering that on to the screen in HAM-8 or 256 colours will require about another half megabyte of graphics memory. So that's 1.5Mb on top of any memory the *ColorKit* program itself uses. To give an extreme example, if you were to scan a 4in by 10in area at 200 dpi you would require more than 3.5Mb of memory for the 18-bit data.

There's no doubt that you could scrape by with just 2Mb of memory, but to be able to multitask or use ColorBurst productively you really need 2Mb of graphics memory and at least 4Mb of expansion memory. Same goes for the AlfaColor hand scanner, but with the PowerColour you'll get away with 3Mb of expansion memory because its 12-bit images consume less.

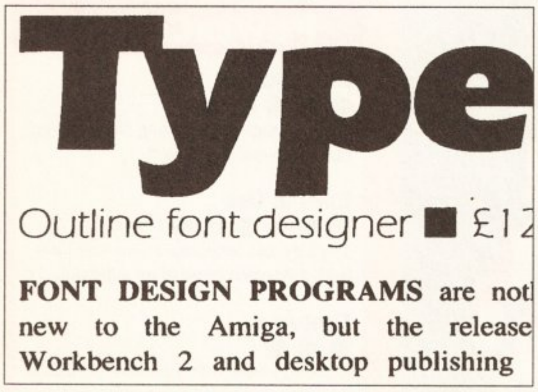


While the scans obtained from ColorBurst contain the truest colours of the three hand scanners, there is still a lot of noise evident.

Comparing the results obtained from the three Amiga colour hand scanners, the ColorBurst's scans are

THE TYPEFACE IS FAMILIAR...

Optical Character Recognition (OCR) is not something everyone needs. Unless you need to regularly transfer swathes of printed text from paper into ASCII format, even £49 is quite a lot to pay for software that may only be loaded once in a blue novel.



Migraph/Power OCR has no problem with text like this in three different fonts, although it cannot recognise very large text – anything over about 24pt in size.

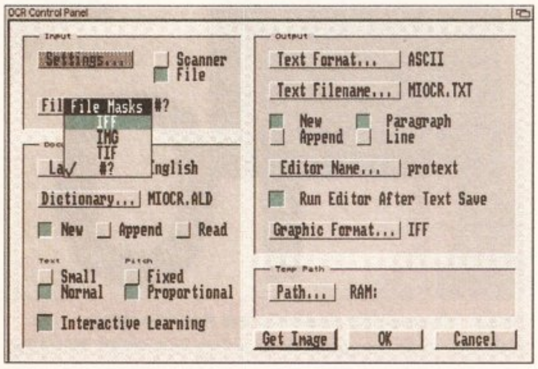
But if you do want OCR, then you have four choices: *Migraph OCR, Migraph OCR Junior, Power OCR* and *Power OCR Junior.* Actually this is only two choices really because the Power OCR packages are in essence exactly the same as the Migraph ones except that they have added built-in support for the Power monochrome and colour hand scanners and have "Power" on the label instead of "Migraph".

Migraph OCR Junior comes bundled with the ColorBurst colour hand scanner and the AlfaScan Plus mono hand scanner. The only difference between the full and Junior versions is that in Junior you can't import a previously-scanned image. In other words, with Junior you have to scan the text and OCR it straight away – you can't scan and save a few pages, then import them one at a time and OCR them, as you can with the full version.

OCR is a memory-hungry process. Both the full and the Junior versions require at least 2.5Mb to even think about running. If you want to OCR long columns of text, more memory will be required.

Power OCR Junior doesn't come free with the Power scanners; it is an optional extra that costs another £49. The upgrade to the full version will cost a further £49.

The software is essentially unchanged from the version we reviewed in-depth in *Amiga Shopper* 19. It's fast and it works very well indeed, although having to hand-scan and OCR a full A4 page in three horizontal strips is not the most enjoyable of experiences. The software handles the job well enough, it's just that while you are fluffing about trying to do three fairly straight scans and then OCR'ing them one after the other, you could probably have typed the page into a word processor.



The full OCR package can import pre-scanned pages in IFF, IMG or TIFF format; the Junior version can't.

Working from floppies will slow the OCR process down even further, because the software depends on large lexicons and dictionaries which have to be continually accessed. If your system consists of a hand scanner, about 3Mb of RAM and two floppy drives, you'll be able to use *OCR Junior*, but you probably won't enjoy it. If on the other hand you've got a flatbed scanner, 8Mb of RAM and a hard drive, then you'll probably think the full *Migraph/Power OCR* package is one of the best pieces of software you own.



The OCR software is pre-trained in a couple of dozen typefaces, so even when it's not sure of a character it guesses correctly most of the time. You can also train it to recognise typefaces it doesn't already know.

without doubt the best. But they still contain a fair amount of noise and are certainly not £161 better than PowerColour's 12-bit scans. You do get the *OCR Junior* optical character recognition software thrown in (it's £50 to buy separately – see "The typeface is familiar" below), but that still leaves ColorBurst over £100 more expensive than PowerColour. But of course PowerColour doesn't (yet) work with the A600 and A1200, so for owners of these machines PowerColour isn't an option. The AlfaColor *is* an option, so you'd better read all about that one now and discover why a package that uses the exact same 18-bit scanner head as ColorBurst produces a different quality of scan.

CHECKOUT ColourBurst

Scan Quality
●●●●●●○○○○
But don't expect photo-realism from 18 bits, it just ain't enough colour.

Ease of Use
●●●●●●●●○○
Simple scan-and-save software that my dog could operate.

Features
●●●●●●○○○○
Works with all Amigas, has enough features to enable you get a good grab and save it – which is what it's all about – and it has OCR software thrown in.

Documentation
●●●●●●○○○○
No *War and Peace*, but enough to get you started with both colour scanning and OCR.

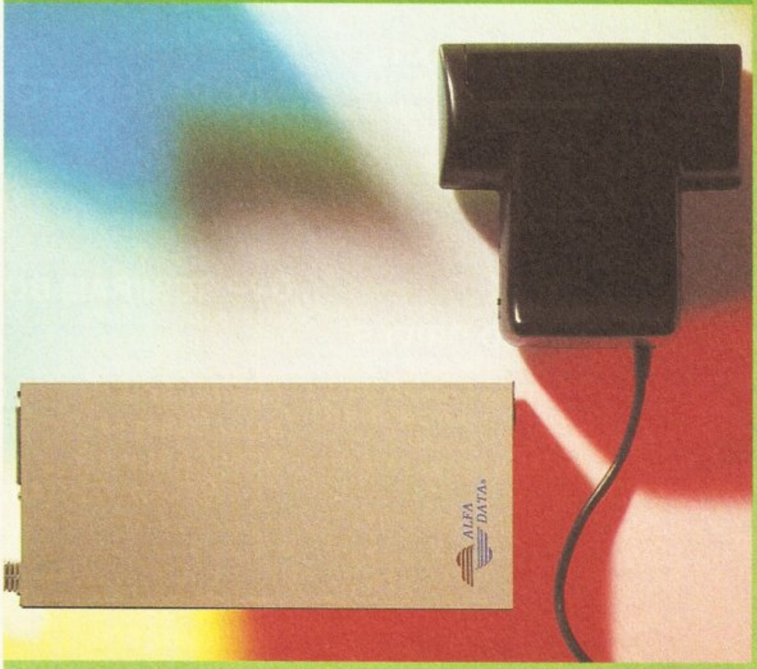
Value for Money
●●○○○○○○○○
For less than twice the price you can buy a full A4 24-bit colour flatbed.

Overall rating
●●●●●○○○○○
Way, way overpriced, but of the three colour hand scanners it is the fastest and does produce the best results.

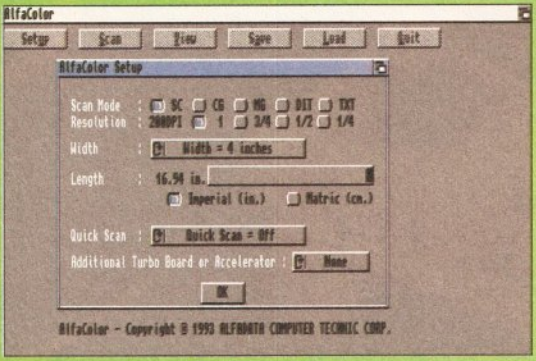
SHOPPING LIST

ColorBurst £399
By Migraph Inc,
32700 Pacific Highway South, Suite 14,
Federal Way, WA 98003, USA
Distributed in the UK by
Golden Image (UK) Ltd, Unit 12a
Millmead Business Centre,
Millmead Road,
London N17 9QU.
☎ 081 365 1102

ALFACOLOR



When I was a kid my mum was always telling me that greens were good for me. But then she never had to use the AlfaColor hand scanner. It's like this: if the light which the scanner shines on the original image is a "natural" light containing an even amount of every colour in the spectrum – close to daylight in other words – then the colours picked up by the scanner head should be well balanced and fairly true to the colours in the original. But if the light has an unnatural bias toward any part of the spectrum, too much green for example, then the green (G) component of every RGB colour will be too much, thus giving bright colours that contain a high ratio of green an overall greenish tinge and making colours that contain a lower ratio of green appear dull and muddy.



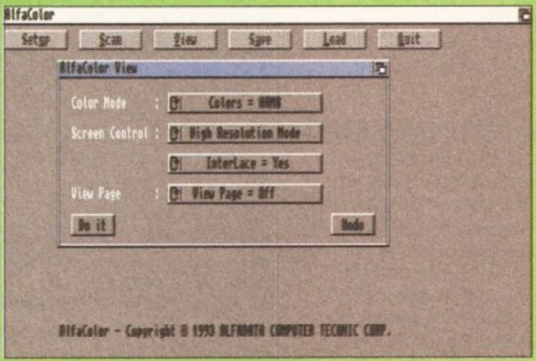
AlfaColor's Quick Scan mode is unique to that package, but it is of little practical use.

And that's what AlfaColor does. It has to do with the power supply. AlfaColor takes its electricity from the external disk drive port, and it simply isn't getting enough. Hence the availability of an optional external power supply unit (PSU), which costs a staggering £39.95 extra.



The IFF24 save in AlfaColor produces enormous file sizes because the software doesn't appear to employ any IFF compression. Watch that disk space vanish!

This PSU supplies the interface with 12 volts, which should in theory be enough to fully illuminate the fluorescent tube in the scanner head. But the interface is obviously not putting out the full whack because while the results obtained with AlfaColor are much better with the external PSU attached, bright colours still have a slight greenish tinge. ColorBurst, which uses exactly the same scanner head, comes with a 13 volt external PSU and produces bright, vibrant, well-balanced colours. So AlfaColor obviously needs another volt. The distributors, Golden Image (UK) Ltd, have known about this problem for some time, yet 12 volts is still (at the time of writing) the only external PSU option.



AlfaColor's View Page feature enables you to see a thumbnail of complete scans that are larger than the screen – handy for checking that you've got it all.

Like the ColorBurst software, the AlfaColor software is just the essentials – scan, render, crop and save, which is the essence of scanning software. Then there is a puzzling QuickScan mode. It sounds like a neat feature but I can't imagine what you'd use it for – the results obtained from scanning in this way are of a very poor quality. Possibly it is intended for doing rough "positionals" for preliminary layouts – but why would you bother to take the time to do an inferior scan if you then have to do a proper one?

AlfaColor's strong point is its interface. Housed in a casing that is similar in shape and size to that of an external floppy drive, the interface is solidly built and has plenty of cable to enable you to bring it round the side of the Amiga or lift it up on to the Amiga's casing. It plugs into the parallel port, and a printer throughport is built into the rear of the interface, with a push button on the front that enables you to manually switch between scanner and printer. One of two lights illuminates to inform you whether it is the printer or the scanner which is currently active.

A feature unique to AlfaColor is a buzzer. With the first model Golden

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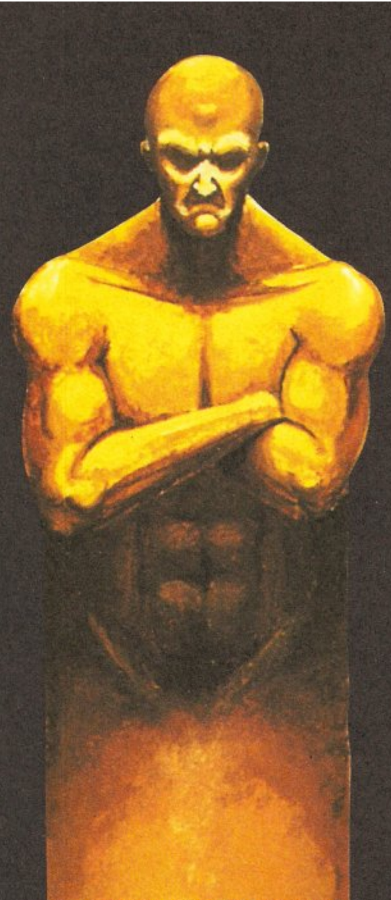
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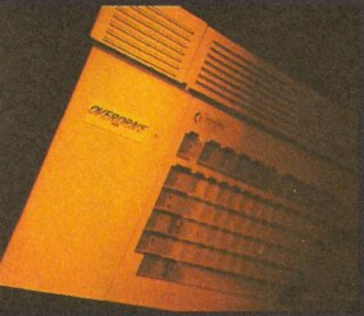
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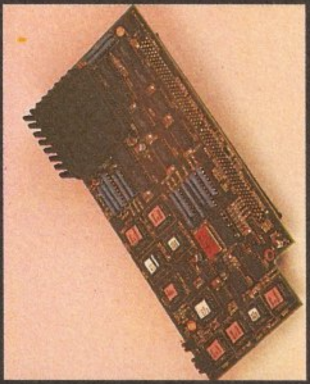
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This machine represent the future of home entertainment and video game play. A self contained CD console which you can expand to a full CD based home computer. It is built around true 32bit technology with 256 screen colours, 68020 processor with a 14MHz clock speed and high resolution screen display. Read the reviews and hear what the experts have got to say about Commodores new baby. I think you'll agree it's time to kiss Sonic Goodbye and wish Mario a fond farewell because the future is here. Optional extras include a keyboard, floppy drive, mouse and a hard drive. All of which will be available soon.

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Image sent me this buzzer buzzed whenever the interface could sense that data was being lost because you were pulling the head too fast. A second model duly arrived with updated software and interface, and the buzzer had been changed to a blipper. Now, the faster you pull the scanner head, the faster the blipper blips. Bit like a playing card stuck in the spokes of a bicycle. Sounds silly, but the new blipper is incredibly useful for helping you to learn the classic hand-scanning technique of a slow, even pull, which is crucial to the quality of the scan.

As supplied as standard the interface takes its power from the external floppy drive port. A through connector is provided so that your external floppy drives can still be connected. But as explained earlier, the interface can't get enough power this way, so the external PSU is a requirement rather than an optional extra. Even then the results you get are questionable.



Because the AlfaColor is underpowered, scans always have a greenish tinge to them.

SHOPPING LIST

AlfaColor £299
External PSU £39.95
By AlfaData Computer Technic Corp, 3FL No.8 Lane 263, Chung Yang Road, Nan Kang, Taipei, Taiwan, ROC
Distributed in the UK by Golden Image (UK) Ltd, Unit 12a Millmead Business Centre, Millmead Road, London N17 9QU.
☎ 081 365 1102

CHECKOUT ALFACOLOR

Scan Quality
●●●●○○○○○○
Unless you happen to like the colour green, you'll need the external PSU, and even then there is still a slight green tinge to scans that will have to be adjusted using a decent image-processing package.

Ease of Use
●●●●●●●○○○
Simple scan and save type software, a doddle to use, but slow compared to the others.

Features
●●●●●●●○○○
The software is rudimentary, but the excellent interface shows the rivals how it should be done.

Documentation
●●○○○○○○○○
Eight and a half pages of poorly translated English in an A5 dual language booklet. The words "service" and "lip" spring to mind.

Value for Money
●●●○○○○○○○
Still way too expensive for what is essentially a hobbyist tool, especially considering that it is next to useless without the external PSU.

Overall rating
●●●●●○○○○○
The person who designed the interface should get an award. Shame about the PSU and slow software.

HANDY TIPS

Hand scanning is a skill that only practice can perfect. For optimum results you need to pull the scanner head quite slowly and very evenly. As is true in life generally, it's the jerks that cause most of the problems. And the reason you jerk the head is almost always because you are pressing down on the head too heavily.

Colour hand scanners have been designed to be pulled more easily than some of the older design monochrome scanners. To start with, the button that puts the head into scan mode is a toggle switch, which means you don't have to keep it held in while pulling the head. The rear of the head is conveniently raised slightly, a bit like the rear spoiler of a racing car, and these two design features enable you to press the scan button once, rest a finger lightly on the raised lip at the rear of the head, and gently pull the head without any downward pressure at all. No downward pressure means fewer jerks. Fewer jerks means better scans.

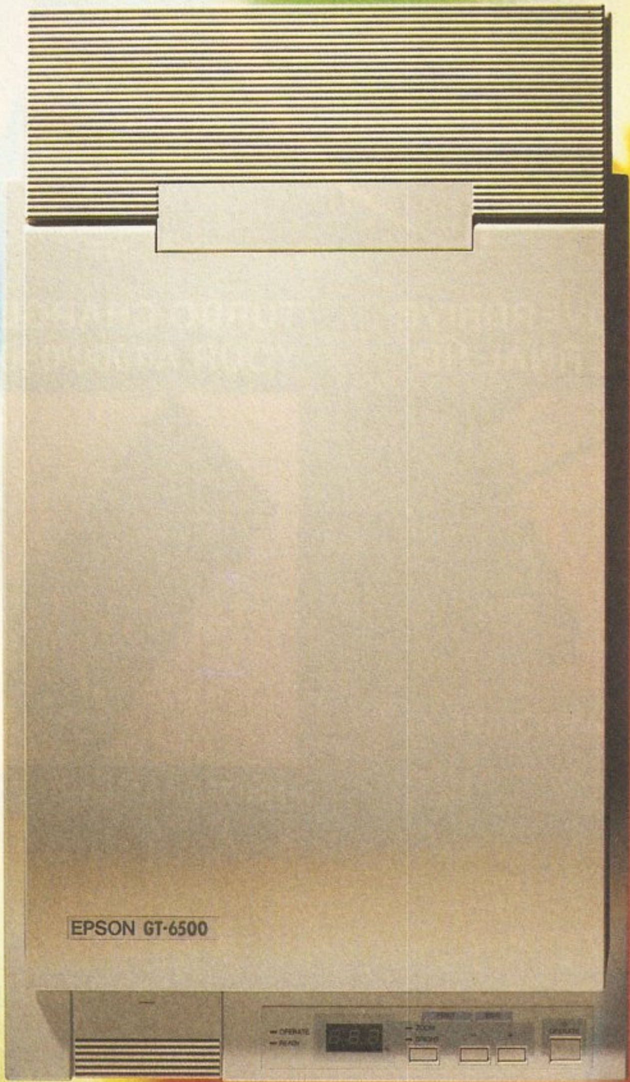
Sometimes the physical qualities of the image you are scanning can cause you to jerk the scanner head. The biggest problem is the front of the head catching the top of a photograph right at the start of the scan, causing you to give the head a little tug to free it. The solution is to cover the image that is going to be scanned with something that is larger and transparent, and scan through that. I use a sheet of glass from an A4 picture frame. This has the added bonus of allowing more ambient light to get to the image, and also some of the reflected light to escape, thus lowering the overall contrast of the scan. The thicker the glass, the lower will be the contrast and the more de-focussed the scan is likely to be.

This technique can be used to good effect if you are scanning material from magazines and the like where you want to eradicate as much as possible the screen (or the moiré pattern if you prefer that term) that is picked up when scanning printed material.

Another way to try to reduce the moiré pattern is to scan the printed image at a slight angle. Often as little as 10 degrees off the upright is enough, but there are no hard and fast rules because many different screen angles are used when publishing colour pictures, so you'll just have to experiment.

Getting the scanning speed right can be a problem, and the quickest way to get a feel for the optimum scanning speed is to scan a circular image over and over again until you get a true circle on the screen every time. If the circle is squashed it means that at some point you were

EPSON GT-6500



The new lower price of the Epson GT-6500 flatbed colour scanner has attracted many customers and has resulted in four Amiga software packages being written for it, three of which are integrated into image-processing programs. But let's first look at the hardware.

The GT-6500 is an upgraded version of the GT-6000 reviewed in *Amiga Shopper* 17. It cost £1,300 back then and we reckoned it was the bee's knees – "the kind of useful, high-quality package that gives one faith in the Amiga's ability to be a serious machine," said the reviewer, a certain C Ramshaw.

The GT-6500 now weighs in at

an amazingly low £799 – and not because the GT-6500 is a cut-down version of the GT-6000 either. It's the complete opposite – faster, better and with even more features.

The scanner is a rather large 22in deep by 13in wide and needs 20in of height when the cover is fully raised. The maximum scanning area is 8.5in by 11.7in, so it will handle A4 length and US Letter width. At the front of the unit are four buttons. One is the on/off switch; the other three enable you to control the zoom and brightness levels when the scanner is connected to a printer. Connected to a printer? Yup, you can scan directly from the GT-6500 to any 80-column or 136-column Epson LQ compatible 24-pin colour printer, or to a Hewlett-Packard PaintJet (HP3630) with parallel interface, so you can use it as a colour photocopier. This feature doesn't work with 9-pin or monochrome printers.

On the rear of the unit is a bi-directional parallel interface, and (for scanning) the cable goes from here to your Amiga's parallel port – and only the parallel port, not to any extra port on a multiport card, nor to a switch box or any other kind of parallel throughport.

What's more, the cable is not a normal printer cable, and it is not provided with the scanner. Power Computing supply one with their own bundled software, but it works only with the Power software. You get one when you buy the ASDG Epson scanner *ADPro* module, and this cable works with all the other software. The GVP software bundled with *ImageFX* doesn't come with a cable, but it works with the ASDG cable and there are pinout details in a README file on the *ImageFX* v1.03 distribution disks (but not on the v1.50 upgrade disks). The *Metadigm* software that comes with Black Belt Systems' *ImageMaster* works with the ASDG cable and a "Standard" cable (presumably as per the pinouts detailed in the GT-6500 manual).

Also on the back of the GT-6500 is a serial port – pointless for Amiga users – and an "options" port to which you connect the transparency unit or document feeder. The only software that currently supports these optional (and very expensive) extras is the GVP software that comes with *ImageFX*. There is also a SCSI interface available, but again all the Amiga software uses the parallel interface.

The GT-6500 manual is rather good, providing easy setting-up instructions and lots of useful information about scanning.

There are 23 built-in scanning resolutions, from 50 to 600 dpi. On top of this there is a zoom mode that can be set from 50% to 200% in 1% steps. This gives you the ability to simulate scanning in any resolution from 25 dpi right up to 1,200 dpi.

The GT-6500 can scan from 1 to 8 bits per pixel per primary colour (R, G and B). That means it can scan in two colours (1-bit), four colours (2-bit), eight colours (3-bit), 16 colours (4-bit), and so on up to 16.8 million colours, which is 24-bit. There are seven brightness levels to choose from, five sharpness levels, four colour correction settings, and six gamma correction settings, one of which is downloadable. It has has three halftoning modes and four dither patterns, plus facilities for two more downloaded dither patterns.

This unit can scan in three different ways. Colour line sequence mode does one pass of the image, reading red, green and blue for every line. Because in this mode the colour for each pixel can be determined as soon as it is read, you can use the colour correction functions. In the other colour mode, page sequencing, the scanner does one pass of the image each for red, green and blue, then combines these three pages of image data to give full colour information. Colour correction is not available when scanning in this mode, and in fact this is the only way to switch colour correction off completely. Scans done in page sequence mode look almost exactly the same as those done in line sequence mode, the only discernable difference being that the reds tend to be redder in page sequence mode.

The third scanning mode is monochrome – that's black and white, not shades of grey. Scanning in shades of grey is a colour mode, except all the colours are grey – up to 256 of them. The monochrome mode has a dropout function that enables you instruct the scanner not to "see" one of either red, green or blue – very handy for scanning line art and text that is on a coloured background. The halftoning and dithering modes were designed for use in this monochrome mode, but some of the software lets you use them in certain colour and greyscale modes – handy for special effects.

All of these built-in features are accessed and controlled by software. Not all the Amiga packages support all the GT-6500 features, and none of them supports the downloadable gamma setting and dither patterns. This is mainly because most of the software was written for the GT-6000 scanner, which has fewer features.

There are four stages to colour flatbed scanning: full page preview; closer preview to mark the scan area more accurately; the actual detailed scan; and finally any necessary retouching or image processing. Bear this in mind while we now look at at what software does what.

SHOPPING LIST

Epson GT-6500 scanner £799
By Epson UK Ltd, Campus 100, Maylands Avenue, Hemel Hempstead HP2 7EZ
☎ 0442 61144
Distributed in the UK by
Power Computing Ltd, Unit 8, Railton Road, Woburn Road Industrial Estate, Kempston MK42 7PN.
☎ 0234 843388

CHECKOUT Epson GT-6500

Scan Quality
●●●●●●●●●○
Produces truly photo-realistic results because it is 24-bit colour.

Speed
●●●●●●●●●○
Depends on the software driving it and the speed of the Amiga you own, but it fairly flies along on a 4000/040.

Features
●●●●●●●●●○
Has 23 different scan resolutions from 50 to 600 dots per inch, eight dithering methods, seven brightness levels, five sharpness levels, four colour correction methods and five gamma correction methods.

Documentation
●●●●●●●●●●
A professional manual that discusses dithering and colour and contains plenty of scanning advice.

Value for Money
●●●●●●●●●●
This kind of equipment used to cost thousands, and the GT-6500 is better than some flatbeds that still do cost thousands.

Overall rating
●●●●●●●●●●
Unbeatable at the price.

moving the head too quickly and data has been lost. Keep in kind that different resolution and scanning modes will operate at different speeds. The rule of thumb is: the more data that has to be transferred from the scanner to the computer, the slower you will need to scan. So you'll have to pull more slowly for 200 dpi 18-bit colour than for 50 dpi 6-bit greyscale.

Keeping your scanner clean is important. There's the obvious task of ensuring that the clear plastic underneath the head through which the light shines is dirt and dust free. A cotton bud dipped in a little glass cleaner helps here, and for getting the dust out of those nooks and crannies get one of those cans of compressed air that professional photographers use to clean camera lenses. You should also keep the rollers clean so that you don't have to pull too hard. Use a lint-free cloth for this – otherwise you'll get fluff all over them.

Do keep in mind that strictly speaking it is a breach of copyright to scan any printed material, except for the purposes of review or "private study or research". You cannot legally use and distribute scans from books or magazines in any way whatsoever without a licence or specific permission from the copyright holder. They are not your property. It's called stealing.

POWERSCAN

When you buy your GT-6500 from Power Computing you get the *PowerScan Professional* flatbed scanning software and cable free. This software has possibly the poorest user-interface I've ever seen – a crying shame because it is the only software that supports the very useful colour page sequence (three-pass) mode.

Getting the initial full-page preview out of PowerScan is simple enough, although it is one of the great mysteries of life why you have to click on no less than two icons in the shape of hand scanners to get at the **Preview** button. This stupid design flaw sets the scene for almost every feature. There is no **Abort** or **Cancel** button to stop the preview when the area in which you are interested appears on the screen; instead you have to wait (snore) for the full page to finish. To mark out the area to be scanned you first select another icon of a hand-scanner (?) which provides you with cross-hairs attached to the mouse pointer. You have one chance to mark out the scan area. No moveable box with handles is provided, just the cross-hairs that work in a similar same way to cutting out a brush in a painting program. Professional? Ha. Good job it's free.

The next panel that appears enables you to control the features built into the scanner. From here you select the scan mode and resolution. The panel is ugly and

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confusing and provides you with measurements in millimetres only. Come on, guys! What bloody use are millimetres when you are working with a device that scans in pixels (dots) per inch? Yes, millimetres may come in handy, but we *need* inches and pixels.

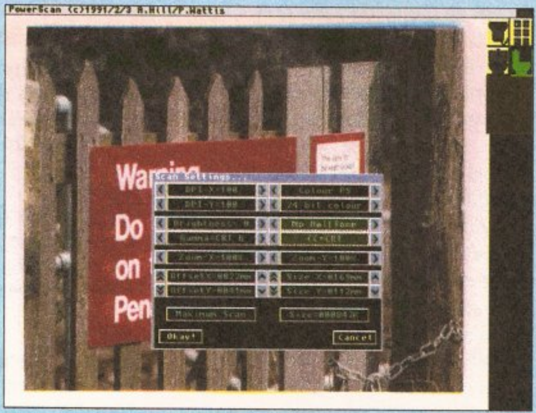
Several features of the GT-6500 cannot be controlled by the *PowerScan* flatbed software. While it is the only software to support page sequence mode, which gives you redder reds, and the only software that lets you manually set different scan resolutions for the X and Y directions, it does not support the sharpness function, nor the dither patterns (just the three halftones), nor the dropout function, nor the optional transparency unit and document feeder.

I understand that Power Computing are currently having the software re-written to support these last two options; it needs more. The *PowerScan Professional* flatbed software is far too slow and awkward to use professionally, and the fairly frequent crashes show that it has been programmed in a rush as well as designed in a rush. Suffice it to say that it is adequate to enable you to use the GT-6500 if you can't afford better software.

SHOPPING LIST

PowerScan Professional (Flatbed) ....£POA

By Power Computing Ltd, Unit 8, Railton Road, Woburn Road Industrial Estate, Kempston MK42 7PN.
☎ 0234 843388



The PowerScan flatbed software has you looking every which way but loose in its cluttered and confusing Scan Settings panel, and the scan is very fiddly to set up. It nevertheless makes a excellent job of the scan.



PowerScan's page sequence mode enables you to scan an image in three passes, which often results in better reds with less blue in them.

CHECKOUT POWERSCAN PROFESSIONAL (FLATBED)

Scan Quality
●●●●●●●●●○
Support for the page sequence mode sometimes gives better reds than the rival packages.

Ease of Use
●○○○○○○○○○
Too awful for words.

Features
●●●●●○○○○○
Lacks support for the new GT-6500 features and does not have the dropout function.

Documentation
●●●●●○○○○○
This kind of software should not need documentation.

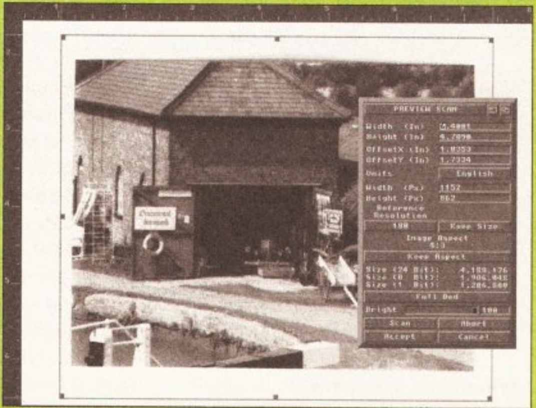
Value for Money
●●●●●●●●●●
What else can I give it? It's free.

Overall rating
●○○○○○○○○○
Professional my foot.

ADPRO MODULE

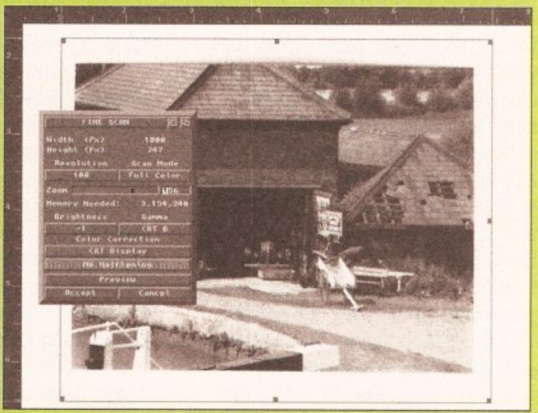
The ES300C scanner module for *Art Department Professional (ADPro)* is the software most GT-6000 and GT-6500 owners are using on the Amiga – not because it's the best, but because it's the cheapest and the easiest to get hold of.

This software – which gets renamed to *EPSON_SCAN* after you use the patch on the *ADPro* 2.3 update disks – works in two ways. If you don't own *ADPro* then you can use the *Scan_To_Disk* program, which, funnily enough, scans directly to hard disk. All you get is a 16-greys preview, no final colour image is displayed. To get that you'll need *ADPro,* and then you'll use the *EPSON_SCAN* loader, which is the same as the *Scan_To_Disk* program except that after completing the detailed scan it passes the image data to *ADPro,* from where it can be processed and displayed. If you own a graphics board then of course you will be able to "save" the image to that board from *ADPro,* provided there is an *ADpro* saver for it, and thus be able to view the image in however many colours your graphics board supports. AGA owners can render to 256 colours or HAM-8; the rest of us will have to live with fewer colours, which makes very hard work of processing 24-bit images because you can't see what the hell you are doing. Upgrade or suffer.



The ADPro Epson scanner module interface may look a little old-fashioned, but it is fast and simple to operate.

The *EPSON_SCAN* module user interface is in line with the overall *ADPro* user interface, and although this is looking a little old-fashioned these days, it is quick and very usable. The full bed Preview can be aborted as soon as you see what it is you want to scan, and a draggable box with handles is provided for you to encompass the area in question. Hitting the **Preview** button again zooms in on this area with another quick preview, providing you with the facility to mark the area more accurately.



Full support for the GT-6500 is lacking from the ADPro Epson scanner module because it was written for the previous GT-6000 model, which had fewer features.

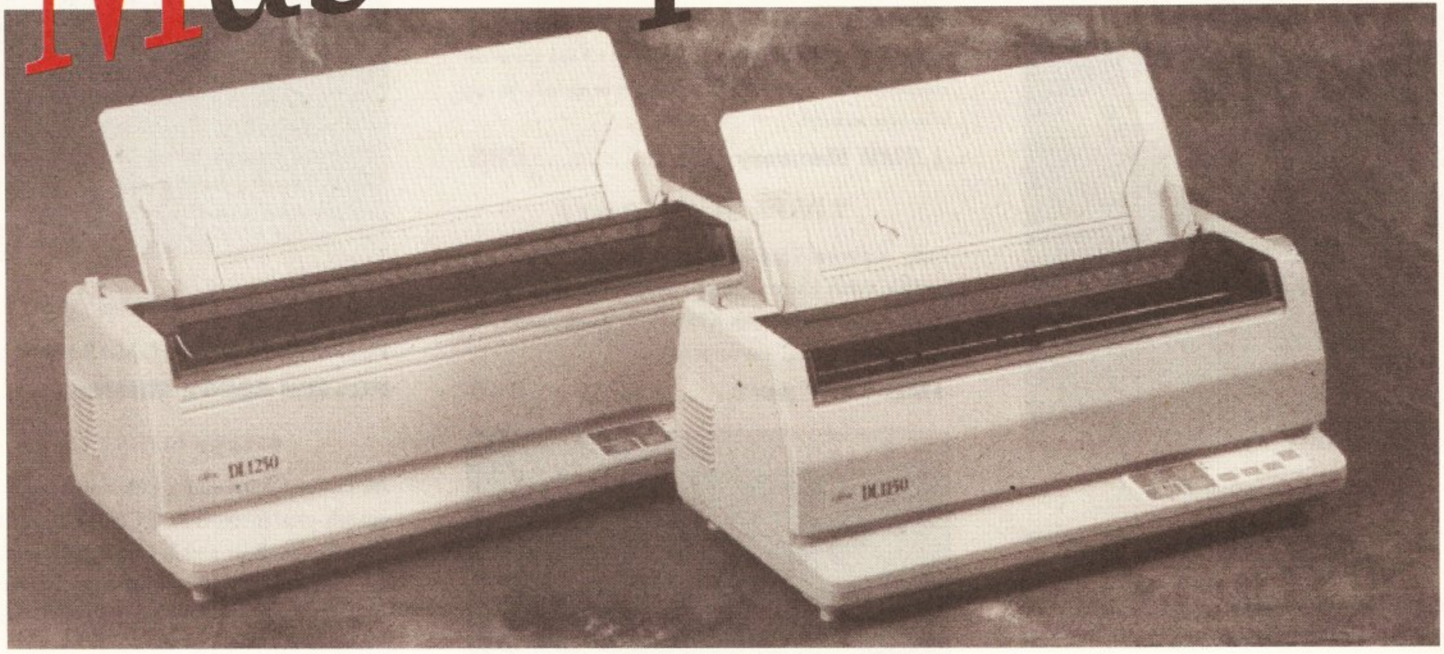
Since it was written for use with the GT-6000, the *EPSON_SCAN ADPro* module lacks support for all the new GT-6500 features, so there is no sharpness function, no dither patterns (just the three halftones), no support for the transparency unit or document feeder. The dropout function, which is not a new feature – it merely prevents the red, green or blue strobe from firing – is not supported either, and neither is the page sequence mode.

You have three scan modes: 24-bit colour, 256 greys, and monochrome. As described earlier, the GT-6500 can actually scan in any number of bits from 1 to 24, but the *ADPro* module does not support these modes. While it is possible in *ADPro* itself to render the image in 256 colours (8 bits) or HAM-8, there is no facility to reduce the image to fewer bits, so you've lost 12-bit, 15-bit, 18-bit and 21-bit compatibility. Only you will know if this is important to you or not.

Everything else is supported, and there are very useful features that enable you to keep the current

continued on page 26

Two Smart Masterpieces – in Colour



The DL1150 Colour and DL1250 are two smart masterpieces from Fujitsu – the second largest computer manufacturer in the world. Thanks to a unique design, these printers will save you a lot of valuable desk space.

The DL1150 is the smaller model and prints in colour on a A3/portrait or A4/landscape. If you need larger printouts, the DL1250 is the perfect choice – it prints on A2 format.

The DL1250 is monochrome but can easily be upgraded to a colour printer by use of an optional colour kit.

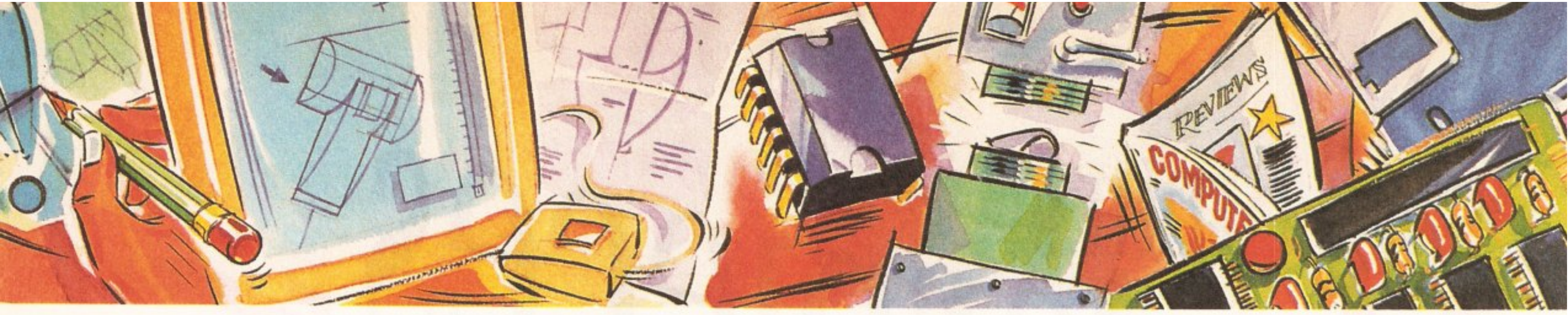
The 24-pin dot matrix technology offers high resolution. Many resident fonts provide a multitude of printout options. You can easily connect your computer with our printers, thanks to Fujitsu's unique DL-menu. Drivers are available, both for Windows and Amiga.

For further information please contact your Fujitsu representative, Amiga-Warehouse, Tel. 0753-554338, Fax 0753-551211 or FUJITSU PRINTER PRODUCTS OF EUROPE, Tel 081-573-4444, Fax 081-813-7371 directly.

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The Floptical stores 20MB of data on a 3.5" disk (a SCSI interface is required).

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Trifecta 500 LX 200Mb HD **£459**

a600memory

1MB RAM with battery backed clock.

A600 Memory **£39.95**

1.5MBmemory

Fully supports 1MB of chip RAM and compatible with Fatter Agnus. (Requires Kickstart 1.3 and above, not compatible with A500+. Your Amiga needs to be opened , this may effect your warranty)

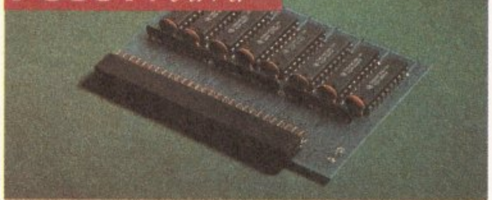
1.5MB Memory **£85**

1MBthru'port

Fully supports 1MB of chip RAM and fully compatible with Fatter Agnus. (Requires Kickstart 1.3 and above, not compatible with A500+. Your Amiga needs to be opened, this may effect your warranty)

1MB Thru' port **£49**

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High quality memory card comes with 1MB of RAM on-board to expand your Amiga A500+ to 2MB of Chip RAM. (Fits in the trap-door, does not affect your warranty)

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a500memory

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A2000 4MB Board **£149**
A2000 8MB Board **£239**

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PC1208 68882-20MHz OMB RAM board.

PC1208 68882 20MHz .... **£**

powerdrives

All Power Computing's disk drives come with month guarantee. The PC880B is available Blitz Amiga, Blitz and X-Copy or Cyclone com ble (this drive is only available to registered ow of X-Copy Professional). The drive comes choice of two colours, black and cream.

PC880B with Blitz Amiga .... **£**
PC880B with Blitz, X-Copy .... **£**
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PC880Bdrive



The award winning external disk drive whi includes Anti-click (cures that annoying clic Virus blocker (prevents viruses) and built backup hardware. Now available with Cyclo compatible chip.

£6

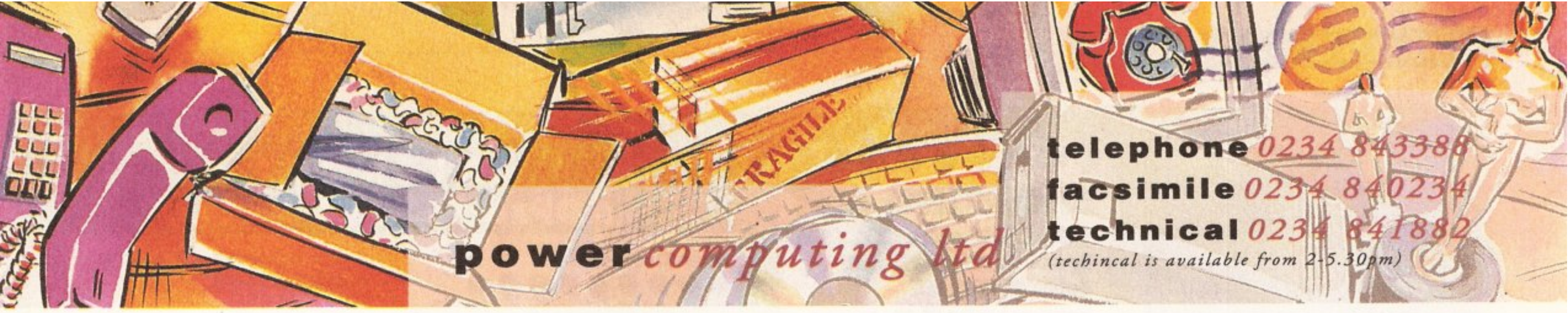
x-backuppro

Extremely powerful disk back-up utility, uses latest custom chip design. Hardware designed Power Computing.

X-Backup Pro .... **£29.**

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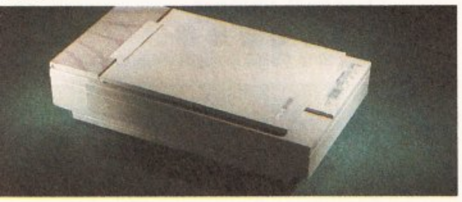


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continued from page 22



This 24-bit scan has not been processed in any way, simply scanned by the ADPro Epson scanner module at 150 dpi (the same as all the others) and saved in JPEG format. Brightness, contrast, colour balance and a lot more are adjustable in the ADPro software.

SHOPPING LIST

ADPro ES300C module ....£POA
By ASDG Inc, 925 Stewart Street, Madison, WI 53713, USA.
Distributed in the UK by Meridian Software Distribution Ltd, East House, East Road Industrial Estate, East Road, London SW19 1AR.
☎ 081 543 3500

CHECKOUT
ADPro ES300C Module

Scan Quality
●●●●●●●●●○
Indistinguishable from the results gained with the rival packages.

Ease of Use
●●●●●●●●●●
So intuitive that after an hour playing around with all the buttons you know all there is to know.

Features
●●●●●○○○○○
Lacks support for the new GT-6500 features, does not have the dropout function and cannot scan colour in anything but 24 bits.

Documentation
●●●●●○○○○○
It doesn't need a manual, honest.

Value for Money
●●●●●○○○○○
You really need the full *ADPro* package, which adds another £200 to the price.

Overall rating
●●●●●●●○○○
About time ASDG brought it up to date.

aspect ratio while resizing the scan area or keep the pixel size of an area while adjusting the scan resolution. Measurements are provided in inches, pixels and centimetres. A memory meter continually informs you how much memory the scan requires; while it remains displayed in white you have enough memory, if it turns black you need more. I've tested it fully with the Gigamem virtual memory system, and it works reliably and as fast as Gigamem and your hard drive will allow it to work. (Don't forget you need a memory management unit (MMU) in your Amiga to work with virtual memory.)

When you return to the scanning module after processing a scanned image, the preview of the scan you did previously is still there on-screen and all your settings have been preserved, which makes re-scanning an image a much faster operation than with software that forces you to do another preview scan and mark out the scan area again.

The *ADPro* module's greatest strengths are its ease of use and its speed. No way do you need a manual to learn how to use it, and it operates and scans faster than any of the rival packages. Its weakness is the lack of support for a long list of features, plus the fact that to use it productively you need *ADPro* and the *Pro Conversion Pack* as well, which raises its price to about £300.

IMAGEMASTER

MetaScan, the GT-6500 scanning software that comes with Black Belt Systems' *ImageMaster* package, is developed by a different company entirely and is available separately in the States, but the simple ARexx script provided is all it takes to get the two working together as if they were just parts of one program. It works with the ASDG cable or a standard cable, but no cable is supplied. The standard cable can be assembled from the pinout details in the scanner manual.

The version of *MetaScan* that comes free with *ImageMaster* is missing some features, but these are mostly present in *ImageMaster* anyway, like support for 24-bit displays. The only important thing missing is a Scan To Disk for those times when you haven't got enough memory for the job in hand. And while with a lot of fluffing about I did get *ImageMaster* and *MetaScan* to work with the Gigamem virtual memory system, because of the way *ImageMaster* works with data, Gigamem runs very, very slowly indeed. Way too slow to be usable.

Once again, *MetaScan* was written for use with the GT-6000, so it lacks support for the new GT-6500 features – the sharpness function and the four extra dither patterns – and it can't control the transparency unit or document feeder. Support for the two add-ons and the dither patterns is not that important, but the sharpness function really can make a big difference to the quality of a scan. It is especially useful for de-focussing scans of printed material in order to help eradicate the moiré patterns produced by the screening process during printing. But *MetaScan* does support the dropout feature, in both monochrome and greyscale modes, which is useful for lifting the details of an image off a uniform background colour.

MetaScan also supports colour scanning in most modes from 8 to 16.8 million colours, and in 8 and 64 colour mode you can even have a halftone enabled.

The biggest problem with this software is memory. *MetaScan* provides details of how much memory a scan will require in its title bar, and you are expected to know how much memory you have available and to keep an eye on this scan memory figure yourself. Attempt to scan something that requires more memory than there is available and *MetaScan* won't complain. It will report to *ImageMaster* how much memory to allocate, so *ImageMaster* will complain (eventually) if there isn't enough memory available, but this process can take a little time, time during which nothing appears to be happening. Sometimes nothing does happen, usually when you are attempting to rescan an image at a lower resolution because your first attempt resulted in a "not enough memory" message from *ImageMaster*. Switch off the scanner, close down the software, start all over again. But you soon get used to these idiosyncrasies and it's not much effort to work round them.



MetaScan, bundled with ImageMaster, has a unique feature that enables you to customise scans' aspect ratios to compensate for different screen displays.

Like the *ADPro* module, *MetaScan* has features that make accurate scanning easier. Aspect ratios and pixel sizes can be fixed or free. When pixel size is fixed, the software automatically adjusts the scan resolution and magnification level to get an image as close to the pixel sizes specified as possible. There are nine reference measurement systems, including inches, pixels, centimetres, picas, points and ciceros. *MetaScan* is the only Epson



ImageMaster reduced this 1,300K 24-bit ILBM produced with MetaScan down to 105K using the least glossy JPEG/JFIF compression method. ADPro reduced it to 135K; ImageFX could only get it down to 384K. What you are looking at is the 105K JPEG image by the way. (All the others are JPEG'ed as well.)

scanner software that enables you to save and load configuration files. It is also the only Epson scanner software that enables you to specify an aspect ratio for the scan other than 1:1, which is useful for when you are scanning material that is intended for display on a computer monitor. What looks right on an 800 x 600 display will look a bit squashed on a 1,024 x 768 display; *MetaScan* gives you the tools to adjust the scanning aspect ratio to match display aspect ratios.

Again like the *ADPro* module, when you return to *MetaScan* after doing a scan and working with it in *ImageMaster*, the previous scan is still in the preview window and all your settings have been preserved.

MetaScan also shows off the true multitasking ability of the Amiga. You can drag out and adjust your detail scan area while the preview scan is still in progress, and doing this has no effect on the speed of the preview scan – it is quick, only a tad slower than the very fast *ADPro* module.

Finally, *ImageMaster* saves the smallest least glossy JPEG files of any Amiga image processing package, and saves them faster than anything else as well. For the Epson GT-6500 owner, *ImageMaster/MetaScan* is almost the perfect Amiga software. Such a shame it doesn't support the sharpness feature.

SHOPPING LIST

ImageMaster ....£POA
By Black Belt Systems, 398 Johnson Road, Glasgow, Montana 59230, USA.
Distributed in the UK by
Amiga Centre Scotland,
Harlequin House,
Walkerburn EH43 6AB.
☎ 089 687 583

CHECKOUT IMAGEMASTER MODULE

Scan Quality
●●●●●●●●●○
Same excellent quality as the rival flatbed software.

Ease of use
●●●●●●●●●○
Shoddy memory management lets down an otherwise impeccable user-interface.

Features
●●●●●●●●○○
If it supported the sharpness function it would have got top marks.

Documentation
●○○○○○○○○○
Strangely, there isn't any documentation provided for *MetaScan*, but then you don't really need any.

Value for Money
●●●●●●●●●○
The price is worth paying: *ImageMaster* has more image-processing features than any other Amiga software.

Overall rating
●●●●●●●●●○
This is the kind of software that keeps you up all night for "just one more go".

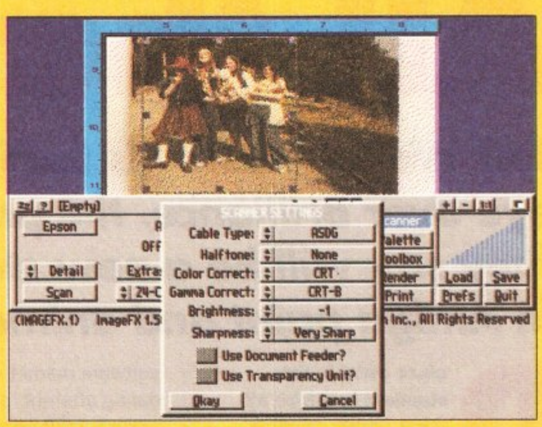
IMAGEFX

The latest version of *ImageFX's* Epson scanner module, the one that comes with the *ImageFX* 1.50 upgrade, supports more features of the GT-6500 scanner than any other software – the five levels of sharpness, from Very De-focussed to Very Sharp; the four extra dither patterns; colour and gamma correction, and brightness, and the dropout feature. And this is the only Amiga software that can control the optional transparency unit or document feeder.

ImageFX is also unique in providing a colour preview. It's only eight colours, dithered to simulate more, and even the manual admits it is not as detailed as the grey preview and takes twice as long to produce. So why bother? Well, it's there if you want it. But unfortunately, support for the zoom function isn't. Nor is a fixed-pixel-size feature (with which you can specify that you want a scan of say 640 x 512 and, as you drag the handles of box over the preview scan, the software controls the zoom and scan resolution functions in conjunction so that you get an image of the specified size). *ImageFX* also lacks a fixed aspect ratio feature, which would be handy when you know the shape of the hole you have to fill on the page – if you want to avoid doing any cropping in the DTP software, you have to enter the pixel, inch or metric dimensions by hand.

Too little thought has gone into the preview scan feature as well. If you've scanned an image and find you've done it wrong, to re-scan the image you have to first preview it again. Bit of a time-waster, that one, though I guess it conserves memory because it means the preview screen can be closed between scans.

Luckily the *ImageFX* Epson scanner module has those unique GT-6500 features. And the aces up its sleeve are the built-in so-called virtual memory system (a data caching system really) and its user interface. Buttons cycle two ways depending on which end of the button you click – *ADPro* and *MetaScan* do the same – but if you double-click in the middle of a button in *ImageFX* you get a "cycle list" which contains all the functions on that button, and you can double-click on any entry in this list to select it. This system means that the interface is uncluttered (and therefore less confusing) and you can still select options very quickly.



***ImageFX* is currently the only Amiga software that supports the new features built into the GT-6500, including the transparency unit and document feeder.**

The *ImageFX* Epson scanner module scans in 1-bit (black and white), 8-bit (256 greys) or 24-bit (16.8 million colours), just like the *ADPro* module. And like the *ADPro* module, there's no facility to scan colours in fewer bits; only *MetaScan* and *PowerScan* give you this option.

The dropout feature, designed primarily for use with monochrome (1-bit) scans, is highly suspect. You can select a dropout colour in 8-bit and 24-bit mode as well, which could be a useful option, but it doesn't seem to work. If, for example, you select red as the dropout colour, only the red strobe in the scanner should be fired, but you can clearly see that it is firing all three strobes.

It never ceases to amaze me how bugs like this get through beta-testing. It's a damn shame because this race is a toss-up between *ImageMaster/MetaScan* and *ImageFX*, and if the Epson scanner module in *ImageFX* worked reliably it would win by a nose. Instead it's lost by a couple of lengths. AS



The sharpness function in ImageFX can be used to good effect to de-focus screened images and give a little lift to photographs. This was scanned with the Very Sharp function. You can just about see a difference on-screen (around the hat and the strands of the hair) between it and those produced with its rivals.

SHOPPING LIST

ImageFX £199.95
By Great Valley Products Inc, 657 Clarke Avenue, King of Prussia, PA 19406, USA.
☎ 010-1-215-354-9495
Distributed in the UK by
Silica Systems Ltd, 1–4
The Mews, Hatherley Road,
Sidcup DA14 4DX.
☎ 081 309 1111

CHECKOUT IMAGEFX

Scan Quality
●●●●●●●●●○
Same excellent quality as its rivals.

Ease of use
●●●●●●○○○○
The best user interface of the lot is spoiled by bugs, no fixed aspect ratios, no control over the zoom function, and having to re-preview an image before re-scanning it.

Features
●●●●●●●●●○
The only software that supports the new GT-6500 features.

Documentation
●●●●●○○○○○
The few things that do need explanation are adequately explained.

Value for Money
●●●●●●●●○○
It costs a powerful lot, but then *ImageFX* is powerful software.

Overall rating
●●●●●●●○○○
Get rid of the bugs, support the zoom, think about how it is going to be used, and it could be unbeatable.

All that glisters...?

Jeff Walker casts his fastidious eye over Brilliance, the program they say will be a new standard in Amiga paint and animation.

D*eluxe Paint* is the standard by which all other Amiga painting programs are judged. That's just stating the obvious – I've lost count of how many "Best Amiga Productivity Software" industry awards every version of *DPaint* has won. It must be 20 or more by now, counting magazine awards. And, to be brutally honest, it hasn't deserved any of them. There have always been better Amiga programs than *Deluxe Paint*, but these programs are quite expensive specialised professional tools that require fast machines and lots of memory, the kind of software that most users have no need for. So *Deluxe Paint* gets the awards and the developers of software like *TV Paint, Real 3D, Superbase, A-MAX, Caligari, Bars & Pipes, Scala* and a host of others are left year after year grinding their teeth and sticking pins in a map of Langley, Berks., the home of Electronic Arts.

Pretty soon those same developers may be moving their pins to a map of Folsom, California, because Digital Creations, a company better known for their high-end desktop video hardware like DCTV, have stormed on to the software market with *Brilliance*, a daring attempt, put bluntly, to blow *Deluxe Paint* away.

Have they done it? Well... yes and no. The immediate reaction when you see *Brilliance* for the first time is *Wow!* But when you take the price into consideration and ponder the "Professional" tag that Digital Creations have tacked on to the "Paint and Animation" description of *Brilliance*, you have to take more than a first impression into account before writing that cheque.

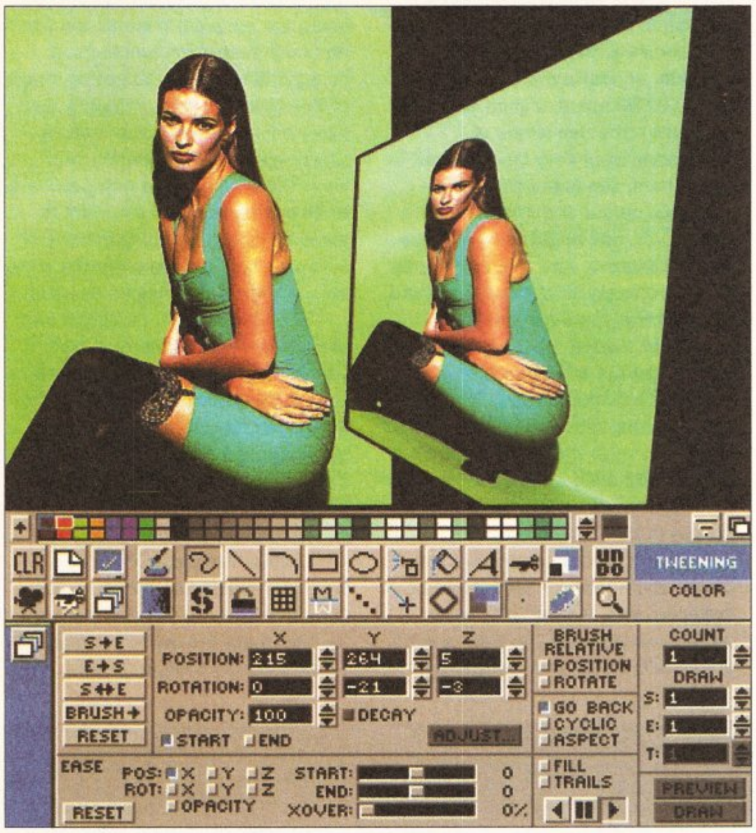
MOVE AND GROOVE

Let's look at the animation facilities first, because it is in this area more than any other that *Brilliance* fails to live up to its "professional" tag.

For creating animations you have a few basic tools. Firstly there's the facility that Digital Creations call "tweening" but is actually just an automatic move-and-rotate facility; it performs the same function as the **Move** requester in *Deluxe Paint*. Tweening is far too grand a description for this function, and I'm labouring the point because you must be clear that *Brilliance* will not be able to calculate the in-between frames of real motion like walking or talking or similar actions. What



Any brushes you cut can be stored for easy retrieval when you need them – just drop them into the wells provided, the eight "holes" under the main control panel. Note the pattern to the right of the image designating an area that cannot be painted because the image is not as wide as the screen.



Perspective effects on brushes are achieved in Brilliance through the Tweening facility by using just one frame for the tween instead of many.

Brilliance's tweening function does is calculate the in-between frames of a brush that starts at coordinates X,Y,Z on or off the screen, ends at other X,Y,Z coordinates on or off the screen some frames later, and in the process of moving from start to end position the brush may be rotated about its X, Y and Z axes.

Brilliance's **Tweening** panel has more features than *DPaint's* equivalent **Move** panel, including an **Opacity** setting that can fade in or fade out a brush over a series of frames. The major improvement is the **Adjust** mode that enables you to set the start/end coordinates and rotation of a brush by interactively manipulating an outline of it on the screen – no more having to use your mind's eye or calculate coordinates. But while this is certainly an enhanced feature, it hardly counts as "professional". Any automatic movement must be in a straight line. If you want your brush (or animbrush) to wander around the screen, this will have to be done in several steps. Along the same lines (no pun intended), to get a brush to speed up or slow down while traversing the screen you must use the **Ease** facility. While this gives you separate control over the velocity of both position and rotation, another improvement on *DPaint*, to get a brush to frequently change velocity again requires many steps.

In other words, this kind of animation is still hard work in *Brilliance*, as it is in *DPaint*. The interactive **Adjust** mode helps to lessen the workload, but a professional would want to specify a "time line", a path for the brush to follow which also enables you to specify the velocity at which the brush moves along every step of that path. *Brilliance* cannot do this. Okay, neither can *DPaint*, but that is not the point; shouldn't a program that says it is for professionals contain the tools that professionals require?

Nevertheless, *Brilliance's* automatic move-and-rotate facilities are more comprehensive and work more quickly than those in *DPaint*, which I suppose is the goal Digital Creations were aiming at.

Control over animbrushes in *Brilliance* is pretty comprehensive too, with easy control over the number of frames to cut and the direction of the cut. **Actual** and **Fit** gadgets enable you to mould an animbrush into more or fewer frames of animation, and a small VCR-style panel is provided to make it easier to paint the animbrush frame by frame. There is a **Morph** facility (what *DPaint* calls **Metamorph**) that calculates the necessary frames that will transform

one brush into another in a given number of frames. This isn't proper morphing of course – in fact it looks positively ridiculous when compared to the facilities provided in programs like *Imagemaster, CineMorph and MorphPlus*. *Brilliance's* **Morph** feature has its uses – it does at least give you the power to change shapes – but once again it is a mile away from the kind of morphing required for truly professional work. Don't expect to be able to create with *Brilliance* the classic morphing example of changing one person's face into another.

Still with animbrushes, of course these have to be drawn frame by frame before you can cut them. The classic technique for creating animated motion is to draw the first frame, draw the last frame, then decide how many frames you want between and draw them one after the other. This is what real tweening is – the process of producing the "in-between" frames. Typically this might be an arm bending and moving, legs bending and walking, a puff of smoke appearing and then dissipating... the sort of stuff that it is impossible to do with the simple move-and-rotate facilities in both *Brilliance* and *DPaint*. So you must do it by hand.

LIGHT ONION, ANYONE?

Now, something that helps when drawing the in-between frames of an animation is the ability to see the previous or following frame "underneath" the frame you are drawing, thus making it easier for you to draw the current frame. Traditional animators use either a kind of tracing paper or clear acetate for this "onion skin" technique. *DPaint* provides something called a light table that simulates the onion skin technique. *Brilliance* does not. This inadequacy is perhaps not as important as the limited movement and morphing facilities, but it is an inadequacy nevertheless.

So while *Brilliance* absolutely has more animation facilities overall than *DPaint*, and while those animation facilities certainly create frames more quickly and to a higher standard than *DPaint* does, there isn't much that is truly professional about them.

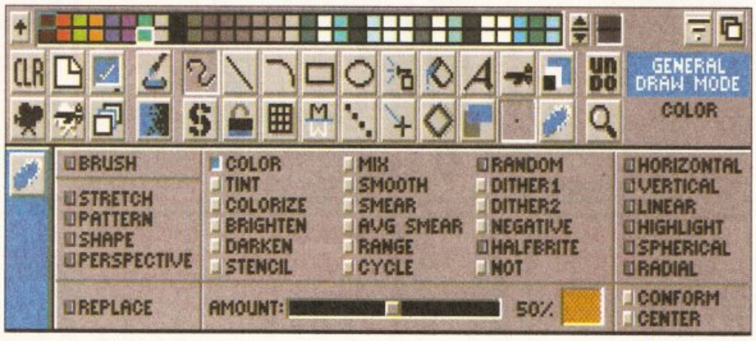
Before leaving the subject of animations I should mention that *Brilliance* can save them in four formats: the old Op 5 Byte format, the more modern and faster-running Op 8 Word and Op 8 Long formats, and as sequential files.

TRUE COLOURS

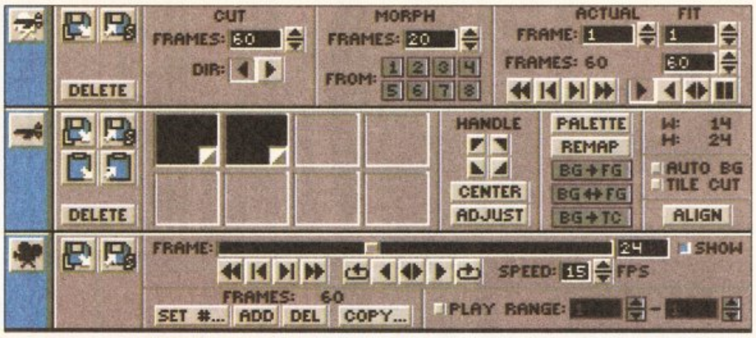
Animation is however only *Brilliance's* second fiddle. I'd hate you to get the impression that *Brilliance* is a poor program because it can't cut the professionally animated ice. *Brilliance* is first and foremost a painting program, so we must consider its potential in this area to form a balanced opinion.

When you buy *Brilliance* you actually get two painting programs, both of which contain the animation facilities discussed above. *Brilliance* itself is a "register-based" program. That means it will enable you to paint and animate in 2 to 256 colours. The second program is called *TrueBrilliance*, and this works in HAM-6 and HAM-8 screen modes only. The reason for the "True" part of the name is that although the picture you seen on your screen will be in HAM-6 or HAM-8 (so from 4,096 to a maximum of a few hundred thousand colours), colour fidelity is maintained in memory in either 15 or 24 bits (your choice), and another term for 24-bit colour is true colour.

Put briefly, what this means is that *TrueBrilliance* provides you with the ability to paint in up to 16.8 million true colours without the need to own a 24-bit graphics board and 24-bit painting software to see what you are doing. Of course the limitations of the way Hold-And-Modify (HAM) screen modes work mean that what you see on the screen is not exactly what you get if you save your work as a 24-bit ILBM, but I went to the enormous effort of testing *Brilliance* with a 24-bit graphics card (I just happened to have one handy) and can affirm that the colour discrepancies are not great enough to prevent you painting with confidence. Of course if you are never able to view 24-bit pictures in all their glory you'll have to take this on trust until such time as you can.



A fine array of drawing modes is available, the ghosted buttons denoting which options are not available for use with the tool currently selected.



The animbrush (top), tweening (middle) and frames panels contain enough features between them to keep all but the most discerning animator happy.

Strangely, *TrueBrilliance* has no support at all for graphics boards. Yes, okay, don't shout, I'm not missing the point. I completely understand and appreciate that the whole thinking behind *TrueBrilliance* is that you don't need to own an expensive graphics board, but how difficult would it have been for Digital Creations to provide some kind of viewing facility via external modules, in the same way that programs like *ADPro, ImageFX* and *Imagemaster* do, thus providing the ability to have at least limited support for any graphics board? Still, all the graphics boards come with 24-bit viewers anyway, so I shan't go on about it.

As far as features go, *Brilliance* and *TrueBrilliance* are almost complete clones of each other except for one or two enhancements in *TrueBrilliance* that are there because it isn't limited to a 256-colour palette. So all of what follows applies to both programs unless I say otherwise. A full discussion of the features in *Brilliance* would fill a book. Funnily enough, it does fill a book. It's called The Manual. But the tutorial section of the *Deluxe Paint* manual is larger than the entire *Brilliance* manual, which contains just 24 pages of tutorials – actually just short walk-throughs, five-minute guided tours, as it were. During these walk-throughs, which cover a microscopic fraction of *Brilliance's* potential, no attempt is made to explain why you are doing what you are doing. For example, the four pages on stencils, a feature which is always one of the most complex in any painting software, amounts to "do this, do that, do this, do that... understand?" The almost blank fourth page of the stencils section would seem an appropriate place to write NO in large red letters. And this in a program that costs £200. In case you are unfamiliar with the UK monetary unit, two hundred of it is a lot of money. You can buy a week's holiday in Spain for less.

DOING THE DO

Ah well, who reads manuals anyway? What about the program? Well, considering that almost all Amiga users own *Deluxe Paint*, it will be easier to tell you what *Brilliance* can't do, rather than what it can. Filled shapes can't have a different outline colour than the fill colour or

continued on page 32



Retouching images in this way requires you to work in high magnification, and you have all the tools you need to do it. Alas, in zoom mode Brilliance will not allow you to cut a brush that is larger than the zoom window, forcing you to work in a lower magnification than perhaps you would like.

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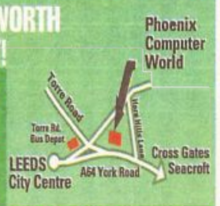
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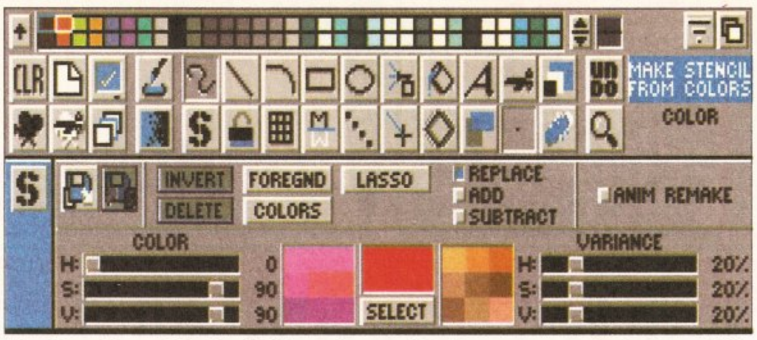
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continued from page 29

pattern, so this has to be done in two steps. There is no **Blend** drawing mode. *Brilliance's* equivalent of *DPaint's* **Symmetry** tool is just a simple X/Y mirror. No traces can be left behind when painting with lines and rectangles and so on, except if it is done by "tweening". There is no block copy facility in the palette requester. And that's about it. Everything else *DPaint* does, *Brilliance* can do, and in almost every instance it does it either faster, better or in a more intuitive way.

The two big selling points for *Brilliance* are its speed and the 24-bit colour support. Even on a 68000-based Amiga, *Brilliance* is fantastically fast in HAM mode compared to rival software. Remember how *Deluxe Paint III* used to feel in 32 colours? *Brilliance* in HAM feels even faster. It doesn't do everything quickly, mind you. Switching anti-aliasing on slows it down considerably. And the wait while *TrueBrilliance* loads anything but a HAM image is quite long. Both of these feel very slow even on a 4000/040. Loading an animation into *TrueBrilliance* takes forever. At least it seems like forever, and the wait feels longer than it really is because there is no progress meter, so you have to sit and stare at that stupid watch that needs winding. A small oversight in the load/save requesters is the lack of a **Cancel** button. All the best graphics software will allow you to cancel a load or save operation these days.

As far as speed is concerned no Amiga owner will be unhappy with



The Stencil panel in TrueBrilliance is possibly the most complex feature of the software. Some experimentation will be required to learn how it works.

Brilliance. Memory is another matter. The back of the box says 2Mb required, 4Mb recommended. As usual you can double those figures to get more sensible ones. You see, the *Brilliance* programs themselves are over half a megabyte each, and 24-bit data takes up a lot of memory. A 640 x 512 picture will consume almost 1Mb. So if you've only 2Mb of memory you will not have enough left for a swap buffer, or a spare page as it is often called. With 4Mb you'll have enough for a 640 x 512 swap buffer, but because of the way the Amiga graphics and expansion memory works, that swap buffer will be consuming precious display memory even when it isn't being displayed. Even then you won't have enough memory for yet another buffer, and one of the major features of *Brilliance* is its ability to have as many pictures or animations loaded at once as memory will allow.

A BRUSH WITH INFINITY

Thanks to the effectively-unlimited palette in *TrueBrilliance*, the pictures in every buffer can use as many colours as they need and whatever colours they like, and brushes can be freely cut and pasted between buffers without worrying about re-mapping palettes. Of course the register-based *Brilliance* consumes only a third of the memory that *TrueBrilliance* does, because it is limited to 256 colours – or 8-bit pictures, to put it another way.

The images you load into *Brilliance* need not be screen-sized. For instance if you import a 200 x 400 pixel picture, then the area to the right and below the image is not padded out with the background colour, which is what *DPaint* does – which is a right pain in the bum because you have to cut and save the image as a brush if you want to preserve its dimensions after working on it. Instead *Brilliance* simply masks off that area of the screen with an obvious pattern and will not allow you to paint in it. Major plus point in this workplace, I can tell you.

In *TrueBrilliance*, because you have a 16.8 million colour palette, you can load anything into any buffer, no holds barred, memory permitting of course. I mention this because in the register-based *Brilliance* each buffer must be the same screen mode and resolution (but not necessarily the same dimensions), which restricts your options slightly.

Swapping between buffers is neatly handled via a slider in the buffer panel, from where also you can copy and merge buffers. Alas, complete animations cannot be merged together, only single frames; there's not even the facility to merge the corresponding frames of two animations.

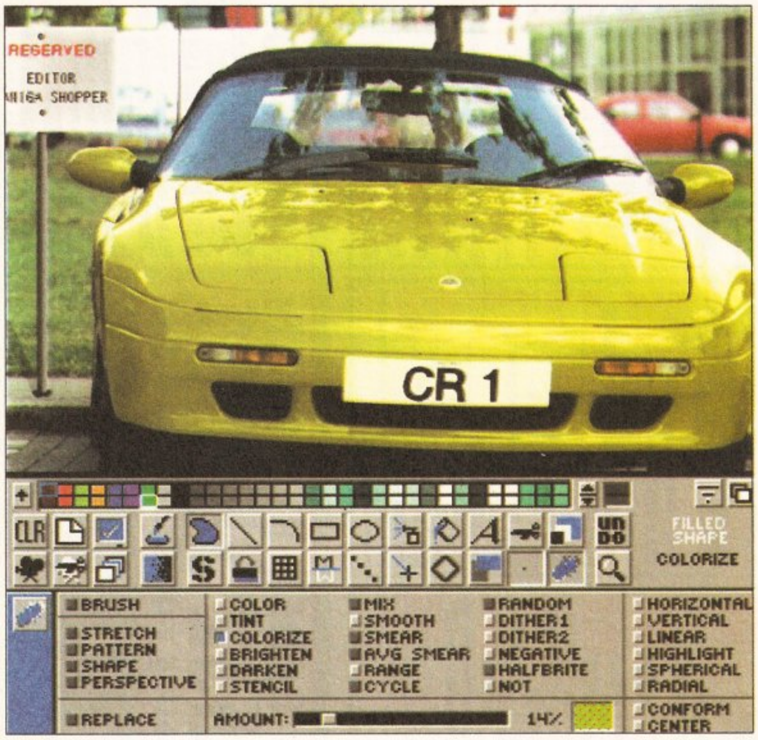
One enormously useful feature is the ability to view a thumbnail of an image that is larger than the screen. Okay, nothing special about that. But clicking the left mouse button on this thumbnail puts you back into normal viewing mode at the position you were at before the thumbnail. Nice. Clicking the right mouse button puts you back into normal viewing mode but moves you to a position centred on where you clicked. Terrific. And this position is remembered, so swapping between buffers will always put you back where you were when you left a buffer. Brilliant!

You can have multiple brushes as well as multiple buffers, although here there is a limit of eight, which is six more than *DPaint*. The brush panel contains wells for the brushes, in which a thumbnail of each is rendered. To pick a brush you simply click on it. Brushes can be re-sized, flipped, bent, sheared, rotated, outlined with one pixel of the current foreground colour, or trimmed by one pixel. The wells take animbrushes as well as ordinary ones, so you can have eight of those on the go at once as well.

PAINT MY WAGON

Brilliance sports a reasonable array of drawing modes – again, a few more than *DPaint*. The **Brighten** and **Darken** modes are useful for creating see-through panels for text to sit on, like the captions you see on the telly. **Darken** can also be used to create realistic shadows. The percentage for **Darken** and **Lighten** can be set in 1% increments.

Tint and **Colorize** are useful for changing the colours of objects. When you are working with a 16.8 million colour palette, altering a colour's RGB values in the palette will have no effect on the picture because the palette will automatically re-map itself. If you've got something that is red and you want it green, altering red to green in



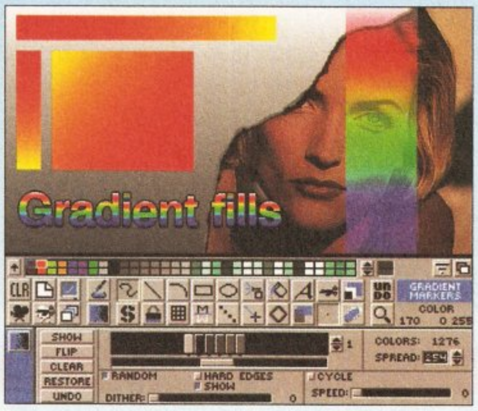
Altering the tones of the bodywork from red to yellow was a simple matter of selecting the colour, selecting the Colorize draw mode and drawing a freehand filled shape around the outline of the red bits. Nothing to it, really!

FROM THE HEART

Something that annoys me and a lot of other people no end is YAFR – Yet Another File Requester – and YAFR is one reason why the famous ARP library was developed, and now the ASL library, of course, which is distributed with Workbench 2 onwards, so that all programs could share a common user interface. And that includes file requesters, do you hear me, developers? Digital Creations have created Yet Another File Requester, and while it is slightly better and certainly bigger than the one in *DPaint*, how simple it would have been to give the user the option of using either the Digital Creations monster or the standard ASL requester, which is what all other good Amiga software does. I'm sure Digital Creations will put this small oversight right with the next release.

FADE TO BLACK... OR ANY OTHER COLOUR

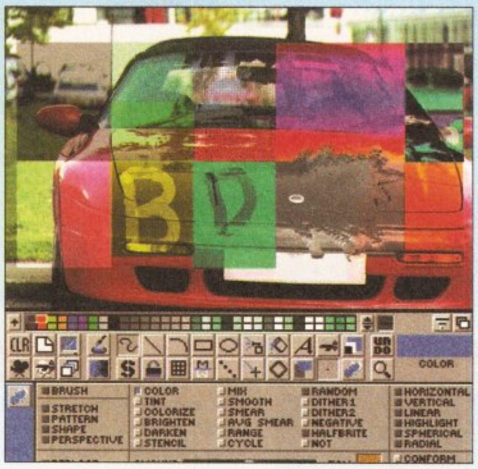
Brilliance gives you six types of gradient fill to choose from: the classic horizontal, vertical, linear, highlight, spherical and radial progressions. Two-, three- and four-way progressions are not supported, although these can be fudged by tiling. Setting up a gradient is a



Setting up and using gradients in Brilliance is a breeze – one of its high points. Effects like this can be created in just a few minutes.

breeze. Up to 128 real or "dynamic" colours can be specified, and *Brilliance* will automatically calculate the progression (the spread of colours) between any two colours. For instance if you put red at one end of the range and violet at the other (so all you've done is select two colours) and then set the spread to be the greatest possible, *Brilliance* will automatically calculate more than 32,000 colours that progress from red to violet. And before the purists write in to remind me that no way are 32,000 colours required to progress from red to violet, that's not the point. In this particular example *Brilliance* has counted any duplicate colours in that total. The point is that should a gradient progression require that many colours, *Brilliance* will do it. So slap a green in the middle of that range and the gradient will progress from red to green to violet, traversing the entire spectrum (ROYGBIV) in about 32,000 steps. Of course your screen is only a limited number of pixels wide and high, so selecting progressions that contain more steps than you have pixels wide or high in the picture is a bit silly. In this example, selecting a spread of 4 creates a ROYGBIV progression of 636 steps, which is enough to produce a smooth gradient of screen width (ish) so that every pixel across is a different colour.

In *TrueBrilliance* you can have all these colours; in the register-based *Brilliance* you can have only 256. Not to worry, a dither slider enables you to simulate smooth changes using either a random or ordered pattern.



Special effects can be created using a mixture of drawing modes. The transparent gradient fills (above the smear here) are deeply wonderful.

The slickest gradient feature is the **Hard Edge.** By specifying a double marker you can get the gradient to progress smoothly from the first dynamic colour to the top dynamic colour in the double marker, and then the gradient will change abruptly to the colour of the bottom double marker and progress smoothly to the next dynamic colour.

Up to eight gradient ranges can be set up but, alas, none can be saved individually, although they do get saved (and imported) with the image.

---

the palette won't help you. But with the **Tint** and **Colorize** drawing modes it is easy to make sweeping changes to colours. **Tint** affects all colours except black, **Colorize** affects only those pixels that have a colour content, so it has no effect on white, greys and black.

The **Stencil** drawing mode is an easy way to create a mask: by using lines, shapes or freehand you can protect an area of the screen from being over-painted. **Mix, Smooth** and **Smear** do what their names suggest. **Average Smear** does the same as **Smear** except that it affects only those pixels with a colour within the gradient range currently selected. **Range** causes each pixel under the brush or area being filled to be incremented or decremented one position in the current gradient range. When the **Cycle** mode is selected, paint applied to the canvas changes, cycling through the colours in the current gradient. The **Random** drawing mode works in a similar way to this except the colours are randomised instead of cycled.

DITHERING ABOUT

The two dither modes apply paint to the canvas using a dither pattern that changes according to the setting of the dither slider. **Negative** does what it says. **Halfbrite** is for converting colours under the brush to their halfbrite counterparts. **NOT** is a weird mode that games programmers will doubtless use a lot.

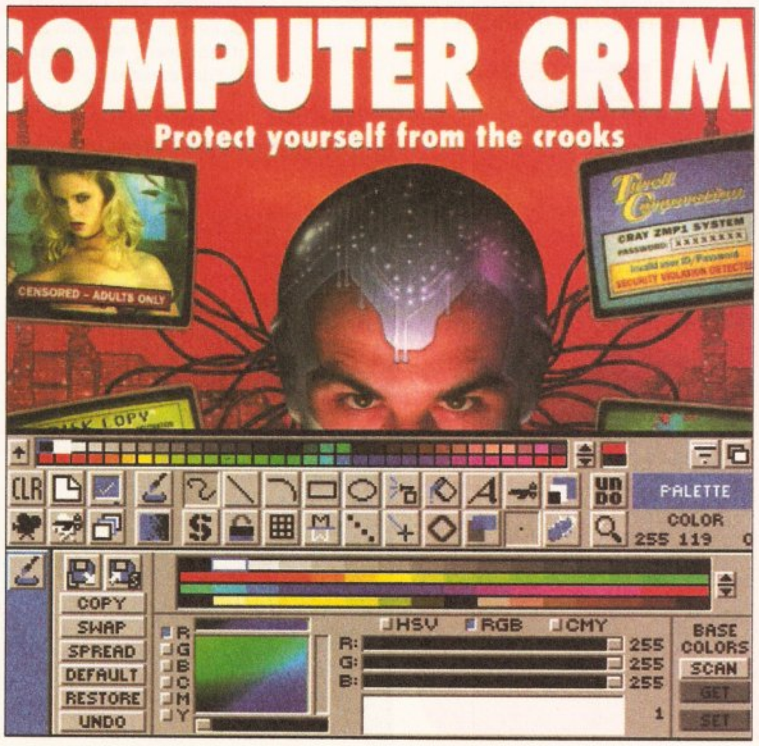
Gradient fills are well supported, one of *Brilliance's* strong suits in fact – see the panel above for details.

The palette in both *Brilliance* and **TrueBrilliance** is controlled via a colour cube. If you've never used a colour cube before you might have trouble wrapping your brain around it because it works in three dimensions. But of all the colour cubes I've seen, this one is the easiest to understand and use. If the cube gives you a headache there is the traditional slider system for RGB, CMY and HSV. The **Saturation** and **Value** components on the HSV scale run from a more sensible 0–100 instead of the 0–255 scale that most other software uses.

The usual drawing tools are provided for freehand, lines, rectangles and ellipses. Two types of curves are supported, the traditional single curvature around the mid point of a curve, and the more complex and more useful curves that have start and end anchor points and a curvature around two user-specified control points. Bezier curves, in other words. Considering that Digital Creations have taken the trouble to implement Bezier curves, it is a puzzle why they didn't extend the facility to lines and shapes. The ability to alter the shape of a polygon by dragging corner points is extremely useful. Taking this a step further, the ability to alter the shape of a brush by dragging corner points is a very quick and intuitive way of adjusting perspective. Am I being too hard on *Brilliance* if I say that a truly professional painting program should contain these features? Sure, you can achieve perspective via *Brilliance's* interactive tweening facility, but this is a cumbersome and inexact method in comparison.

The Airbrush tool has three modes. **Fine spray** is the traditional method that sprays single pixels with specified flow and focus rates. **Splatter** uses the entire current

continued on page 36



An effectively-unlimited palette in TrueBrilliance means that brushes can always be imported and used in their own colours – no re-mapping is ever required. There's a colour cube as well as sliders for playing with the palette.

QUALITY AT THE

THE FIRST 9Mb 32 BIT INTERNAL RAM CARD FOR AMIGA 1200

Features:

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Important:
Please note: to operate the Mathematic Co-Processor with clock rates over 14MHz you need a Quartz (Oscillator). The Quartz (Oscillator) must have the same clock rates as the Mathematic Co-Processor.

ITEMS	PRICE
AF1200 1Mb with clock, no Oscillator, no FPU Processor	£115.00
AF1200 5Mb with clock, no Oscillator, no FPU Processor	£239.00
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AF1200 5Mb with clock, Oscillator, 25MHz 68882 FPU	£295.00
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CORDLESS INFRA-RED MOUSE

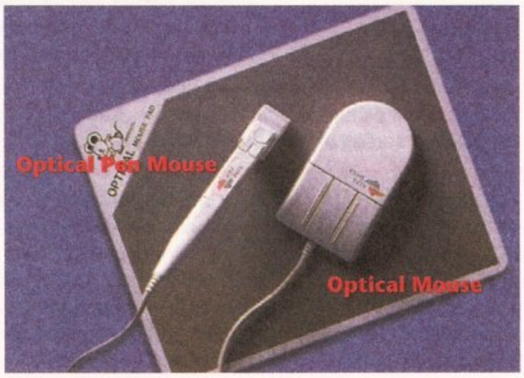
Remote control mouse, long working distance. Long life rechargeable battery. 260 dpi. Price includes hard Mouse Mat.

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A stylish Pen Mouse with quality construction and smooth fast movement. Micro switch buttons. Ideal for DTP, artwork etc. Price includes Optical Pad.

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Powerful Colour image Processing Tools for the Office or Home Environment. No longer a "Professional Task" to scan high quality images.

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- ★ Intelligent maximum scanning length indication.
- ★ Imports/Exports IFF file formats.

System requirements:

- ★ For all Amiga models with a monitor or compatible TV set, 1 megabyte of RAM and a floppy drive.
- ★ More memory and hard disk are recommended but not required.
- ★ Compatible with Amiga WB 1.3 and higher (WB 3.0 also supported).
- ★ Any painting, publishing and OCR programs that load IFF files. Examples:- Deluxe Paint, Professional Page, Page Stream, Saxon Publishers, Mgraph OCR.

PRICE £299

Hardware features:

- ★ Easy intallation, plug in and go in just minutes.
- ★ 256,000 colours, 105mm (4") scanning width.
- ★ Built-in over speed buzzer to prevent scanning too fast.
- ★ With SC (Super Colour). CG (Colour Grey) MG (Monochrome Grey) and D/T (Dithered/text) modes selection switch.
- ★ Selects 50/100/150/200 DPI by resolution selector switch for SC and CG modes.
- ★ Selects 100/200/300/400 DPI by resolution selector switch for MG and D/T modes.
- ★ Metal interface box with printer through port.

All prices are inclusive of VAT
Products advertised represent a small sample of our in-stock range. A complete price list is available on request.

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continued from page 33

brush as the "droplets" to spray. With the **Shape** mode the portion of the current brush that does not consist of the current background colour is used as a mask through which paint is sprayed, so every colour except the background colour is protected from being over-painted.

Fill works with the current colour or brush, and the manner in which the fill is applied is determined by the settings in the **Draw Mode** panel. For filling with brushes, as well as a straight **replace** there are **stretch, pattern, shape** and **perspective** options. Colour fills can use most of the drawing modes we've mentioned, including gradients and dithers.

Text is supported, of course; bitmap, CG fonts and colorfonts can be used. The text to be pasted is typed into a gadget. When you hit the <Return> key it becomes a brush, and you paste it down wherever you want using any of the drawing modes available for brushes, including the all-important anti-alias. A preview of the text is provided in the font and size specified, but because it is always previewed on a black background, you won't be able to see it if you have black, or any very dark colour, selected as the current colour. (Whoops!) Plain, bold, italic and underlined styles can be selected for any font. The special kerning character in the fonts created and marketed by Kara Computer Graphics is supported.

BETTER THAN DPAINT?

There's stacks more features I've not got space to describe, but I've covered most of the important ones. I think you'll agree that *Brilliance* shines much more brightly in the painting arena than in animation. But is it worth more than twice the price of *DPaint?*



The airbrush tool has Splatter and Shape modes as well as Fine Spray, all flow and focus controllable. Your grafitti could be better than the real thing!

Yes, I believe it is. Its greater speed and the 24-bit colour fidelity of *TrueBrilliance* alone are worth the extra money, even taking into account the absence of the truly professional features that *Brilliance* and *TrueBrilliance* lack.

The big question is: is it better than *Deluxe Paint?* Well, of course it is. It's miles and miles better. Chalk and cheese. No disrespect to Electronic Arts – *DPaint* has had a good innings and has served Commodore and the Amiga community well – but *Brilliance* is in a different class. If EA want to keep winning awards for *Deluxe Paint,* a complete re-think and re-write will be required – no self-respecting panel of judges would give the tip to *Deluxe Paint* over *Brilliance,* even taking price into consideration.

But is *Brilliance* truly professional? I can't honestly say that it is. Too many of the powerful features that professionals would require are missing – including macros, by the way, which is staggering considering how easy it is nowadays to provide Amiga programs with an ARexx port. I almost wept when I discovered that in magnification mode you can only cut out brushes from the area that is displayed within the magnification window. And the lack of convolutions means that work with photo-realistic (scanned, digitised) images – which is surely a major use *TrueBrilliance* could be put to – is limited to over-painting with a few basic image-processing tools like **Darken** and **Lighten.** You may argue that *Brilliance* is a painting program, not an image processor, and I would argue that any professional true-colour painting software must by necessity contain a full array of image-processing features.

For working with photo-realistic images the likes of *Imagemaster* and *ImageFX,* despite their limited painting tools, are much more professional programs and cost about the same as *Brilliance.* For professional painting in 16.8 million colours it is hard to beat *TV-Paint* coupled with graphics tablet and display board, a combination that costs about £1,000 upwards (and requires a Zorro slot of course). *Brilliance* doesn't quite reach the professional standards set by the aforementioned software, but then does it really need to? I concede that most Amiga users may not require this power, so they won't miss what they don't need.

And *Brilliance* has one asset that is arguably the most important feature any piece of software can contain. It is solid as a rock. After days of continual use it suddenly dawned on me that I had not crashed once and had not come across a single flaw in any part of the program. Never have I known a first version of any program stand up like this or be so perfectly polished. I tried my best to knock it over, but *Brilliance* handled everything I could throw at it. This is truly a remarkable achievement by Digital Creations and it augurs well for future versions. **AS**



When you are painting, the Opacity slider controls how much of the image underneath – whatever the background may be – will show through when the Transparent tool is activated. Perfect for uses such as caption panels.

SHOPPING LIST

Brilliance £199.95
By Digital Creations, PO Box 97, Folsom, CA 95673-0097, USA.
☎ 0101 916 344 4825.
Distributed in the UK by:
Micro-PACE (UK) Ltd,
Unit 10 Perth Trading Estate,
Perth Avenue, Slough SL1 4XX.
☎ 0753 551888

CHECKOUT BRILLIANCE

Features
●●●●●●●●○○
Does almost everything *DPaint4-AGA* can do and more, and it does it more quickly. But it lacks some features that truly professional 24-bit painting software should have.

Documentation
●●●●●○○○○○
Disappointing – less than half the size of the *DPaint4-AGA* manual, and no colour at all, even when it would have helped an explanation. No AmigaGuide on-line help.

Ease of Use
●●●●●●●●○○
The intuitive user interface makes up for the mediocre manual, although many of the panels are very cluttered and hence appear confusing until you are used to them.

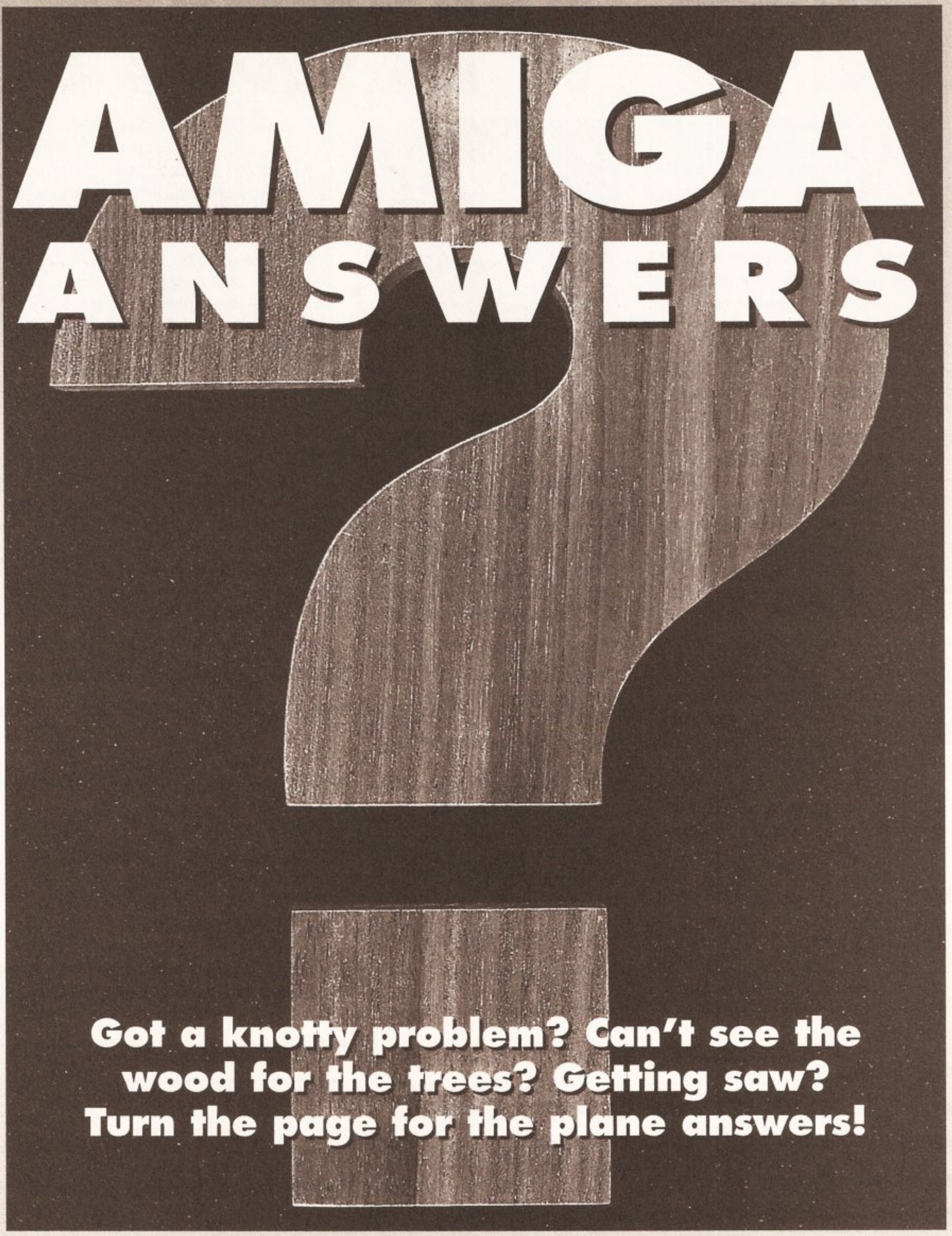
Speed
●●●●●●●●●○
Except for a very few functions, most notably anti-aliasing and loading pictures and anims into *TrueBrilliance,* both painting programs outperform the competition by miles.

Value for Money
●●●●●●●○○○
Brilliance's comparatively high price and lack of professional image-processing features take off some of the shine.

Overall rating
●●●●●●●○○○
I bet you were expecting 9 or 10. Go elsewhere if you want a knee-jerk reaction. But it's early days yet – the next version could be a killer.

CONTENTS AT-A-GLANCE

OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS



USING THE ICONS TO FIND WHAT A QUESTION'S ABOUT



Questions that raise basic problems or deal with elementary issues feature this icon.



This icon's for general Amiga-related queries or questions that don't fall under other headings.



This is the icon you'll find next to queries related to the whole area of desktop publishing.



Questions about monitors, including television display problems, will feature this icon.



This icon's for queries relating to general hardware, excluding kit covered by other headings.



This icon indicates a question asking for buying advice in any area, hardware or software.



If a query concerns printers, printer drivers and hardcopy problems, this is the icon you'll find.



Questions about coding (no matter which language) will have this icon next to them.



This one's for queries about using your Amiga with video hardware such as genlocks or digitisers.



This icon is for questions about MIDI, sampling, synthesizers and music software.



Queries about specific software packages or programs have this icon next to them.



If your question relates to comms, including modem problems, this is the icon we'll use.

NO PROBLEM!

Hello and welcome to our magazine within a magazine – the place where we endeavour to solve all of your Amiga-related problems. We'll deal with any sort of problem, no matter how trivial or complex, no matter what aspect of the Amiga it involves. We devote more space than any other magazine to this service, and we use icons and jargon-busting boxes extensively to make sure you can find your way around the pages as easily as possible. We also try to put the problems in as wide a context as possible, so that their solutions will benefit not just the person who has written in, but all of you with related problems.

We draw on the services of a talented team of Amiga enthusiasts,

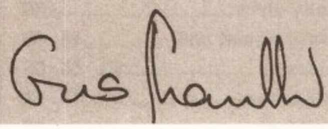


Gus Chandler is the man who coordinates the biggest problem-solving section in any Amiga mag

all of whom are widely regarded as experts in their fields. **Mark Smiddy** is our AmigaDOS expert. **Jeff Walker** is our DTP, fonts and printer correspondent. Then there's **Gary Whiteley,** an expert on video applications and graphics. **Jason Holborn** has mastered the intricacies of AMOS, and with his advice you'll be able to do likewise. Jason also has an encyclopedic knowledge of what's available in the PD world. If you have a query about comms then we'll set recent star of the small screen **Dave Winder** on the case. **Toby Simpson** is our expert code clinician. If you're experiencing problems with anything from C to assembler, try taxing his little grey cells instead. You'll find his special Code Clinic section – in which he removes the bugs from your programs – on page 54. **Wilf Rees** is a man with an education – well, an expert on educational software, at least. He's also got a jolly useful all-round knowledge of Amiga hardware and software. Last but by no means least is **Jolyon Ralph** – he also knows lots about hardware, and specialises in hard drives and CD-ROM systems.

So that's our batch of boffins – the rest is up to you. Keep those problems rolling in. If you've got any tips or hints to share then send them to us and you could soon be a tenner richer. Please mark the envelope "Tips".

Please don't include an SAE with your questions – we simply receive too much mail to be able to offer a personal reply service.



If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you.

Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW. Sorry, but we cannot reply personally to any questions – even if you include an SAE.

Name: ____________________

Address: ____________________

____

____

Your machine:

A500 ❑ **A500 Plus** ❑ **A600** ❑ **A1000** ❑ **A1200** ❑

A1500 ❑ **A2000** ❑ **A3000** ❑ **A4000** ❑

Approximate age of machine: __________

Kickstart version (displayed at the "insert Workbench" prompt)

1.2 ❑ **1.3** ❑ **2.x** ❑

Workbench revision (written on the Workbench disk)

1.2 ❑ **1.3** ❑ **1.3.2** ❑ **2.04/2.05** ❑ **2.1** ❑ **3.0** ❑

PCB revision (if known). Do not take your machine apart just to look for this! __________

Total memory fitted (see AVAIL in Shell for Workbench 1.3) __________

Chip memory available (see AVAIL in Shell) __________

Agnus chip (if known) __________

Extra drive #1 (3.5in/5.25in) as DF__: Manufacturer __________

Extra drive #2 (3.5in/5.25in) as DF__: Manufacturer __________

Hard disk: ____Mb as DH__: Manufacturer __________

Extra RAM fitted – type, size in Mb and manufacturer __________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 32

DISK FULL

BEGINNERS

I am a complete beginner. I have an Amiga 600 with Kickstart 2 and Workbench 3. I've had it one month. I have no hard disk and just the one (internal) disk drive. How can I get my Canon BJ-10ex to work with *DPaint 3?* I have tried installing a printer driver, but all I get is "Disk (DPaint 3) Full" message. I have tried using other printers, like an Epson, but to no avail.

K Spooner
Clacton
Essex

I hope you've made a mistake about which version of Workbench you are using. You should be using Workbench 2.04, 2.05 or 2.1. Workbench 3 was designed for use with the "AGA" Amigas – the 1200 and 4000 – and should not be used with any other Amiga. Check again. The version number will be clearly printed on the label of your original Workbench disk. Even so, select the **About** item from the **Workbench** menu. It should say Kickstart version 38.x and Workbench version 38.x, where "x" means any number. The "38" is the important bit – Kickstart 3 and Workbench 3 will be version 39.x. If you are using Workbench 3, contact your dealer and ask for the correct Workbench 2 disks.

Chapter 9 of the Workbench manual deals with printers and printer drivers. There are step-by-step instructions on installing a driver under the Printer Drivers heading. You must copy the driver from the **Devs/Printers** drawer on the Extras disk into the Devs/Printers drawer on your Workbench disk. The term "**Devs/Printers**" means in the drawer called **Printers** that is in the drawer called **Devs.** (If you are using Workbench 2.1 the **Printers** drawer will be in the **Storage** drawer on the **Extras** disk). If you can't see the **Devs** drawer, click once anywhere in the disk window and select the Workbench **Window/Show/All Files** menu item – that means the **All Files** item from the **Show** sub-menu in the **Windows** menu on the Workbench title bar.

Workbench 2.1 comes with a proper BJ-10 driver, but 2.04 and 2.05 do not, so you should install the EpsonQ driver and ensure that the BJ-10ex dip switches have been set so that the printer in is Epson mode. (The manual will give you details of this.)

After copying the printer driver on to the Workbench disk you must then run the **Prefs/Printer** program and select and save the EpsonQ driver as your preference.

Now, to use this driver with *DPaint,* or any program come to that, you must always boot with the Workbench disk, not with the *DPaint* disk, then remove the Workbench disk, insert the *DPaint* disk, open the *DPaint* disk window and double-click on the *DPaint* icon.

During all this, and even while running *DPaint,* you may be asked to re-insert the Workbench disk. Fed up with swapping disks? Then buy an external floppy drive or a hard drive. Always remember that the Amiga was

ROMBO'S VIDI AMIGA 12 – A CORRECTION

In a reply to a query from J Burns of Sunderland, Tyne & Wear, in *Amiga Shopper* 30, we said that the *Vidi Amiga 12* software install script overwrites Workbench 3.0 system files with older release 2.0 files, causing the machine to crash and requiring the reinstallation of Workbench. We would like to point out that this was true in version 1 of the software, but this was superseded 18 months ago and all new versions do not have this problem. Rombo Productions (☎ 0506 414631) will send an upgrade out to any owner of the Vidi Amiga 12 who asks for one. The Vidi Amiga 12 digitiser package currently costs £99.95. Apologies for any confusion.

A PARCEL OF PRINTOUT PUZZLERS

PRINTERS

1. How do I stop my colour printer ribbon from becoming contaminated with black?
2. Why is my printer ribbon fraying at the edges, and how do I prevent this happening in future?
3. What is the ideal printer driver for my Citizen Pro-dot 24 using *Citizen Print Manager?*
4. My printer is very noisy when printing. Is there any way to add a "quiet mode" of some sort?
5. I will be buying a DeskJet 500 Colour printer. In *Amiga Shopper* 15 you did a review of a public domain PostScript driver called *Post.* Would this be a suitable driver for the Deskjet?
6. Would I be able to install *Post* on *Final Copy 2?*
7. Can the maximum dpi of a printer be changed? Is it a hardware or software limitation?
8. Imagesetters output at high resolution. When does it become irrelevant how many dots per inch an output device can print at? That is, at what level of resolution does it make no difference to the human eye?
9. Does the screen resolution chosen in *Deluxe Paint* have any effect on quality of the printed output?
10. How do I get a scanned image that is 4in wide and 1in high to print out at the same size in 360 by 360 dpi from *Deluxe Paint?*
11. How wide and high is a low-resolution screen with respect to height and width in inches when outputting to paper?

A J Baldwin
Thornaby
Cleveland

CAUTION

1. You can't. There's really no practical way of getting at the print head pins to clean them after you've finished printing in black – and you shouldn't try, because the print head can stay dangerously hot for some time after printing. If the ribbon is picking up black from the paper, try printing the colours before you print the black.
2. Because it's getting worn out. Buy a new one.
3. *Citizen Print Manager* doesn't come with a driver for the Pro-dot. You could try one of the other 24-pin drivers like the Swift24 or 224. You should phone Citizen Technical Help (☎ 0753 584111) and whinge at them about it.
4. No. Your only solution is to buy one of those sound-proofing boxes they use in offices to reduce the noise level from dot-matrix printers. Or buy a quieter printer of course, like a laser or inkjet.
5. No. The DeskJet is not a PostScript printer.
6. Yes, but what's the point?
7. No. It's a hardware limitation.
8. True "typeset quality" is impossible to achieve at anything less than 5,000 dpi, but the untrained human eye can't really discern the difference between 1,270 and 2,540 dpi, the two resolutions used by most PostScript imagesetters. For greys that look like solid shades of grey as opposed to patterns of dots, 600 dpi is a minimum.
9. Indirectly, yes. See 10 and 11 below.
10. In the *Deluxe Paint* **Print** requester there are **%Wide** and **%High** gadgets, and you use these to scale the output. What percentage you have to scale by to get the image to print at the same size as the original depends upon what resolution you scanned at:

- If you scanned at 400 dpi, scale to 19%.
- If you scanned at 300 dpi, scale to 25%.
- If you scanned at 200 dpi, scale to 38%.
- If you scanned at 100 dpi, scale to 75%.

11. This is not really a sensible question. Depending on what printer and printer driver you are using, what your Preferences settings are, and what program is doing the printing, Lo-Res screens (320 by 256 pixels) may print out at different sizes. On top of this, screen resolutions and printer resolutions don't match perfectly, so some more automatic scaling is normally applied.

Deluxe Paint, for example, will print a 640 x 512 pixel screen the same width and height on paper as a 320 x 256 pixel screen. How does it know what size to print the picture? Well, it takes its cue from the **Paper Size, Print Pitch** and **Right Margin** settings in Workbench **Printer** preferences, and then scales the image to print at the largest size possible.

Look, try an experiment. In Workbench **Printer** preferences change the **Print Pitch** to **12-Elite,** and the **Right Margin** to **60.** Hit the **Use** button so you don't save these silly settings permanently. Now run *Deluxe Paint* (without rebooting the Amiga, else you'll lose the prefs settings), turn the screen background white and draw a black border all around the screen – one pixel thick will do; doesn't matter what screen mode you are in. Now Print that picture. Select the left-hand placement gadget and select **Yes** for a form feed before hitting the **Print** button.

When it's done, get out your ruler and measure from the left-hand edge of the paper to the right-hand edge of the box that has been printed. It's about five inches, is it not?

That's because a **Right Margin** of 60 characters at **12-Elite** Print Pitch (12 characters per inch) has told the Amiga that the page width is effectively 5 inches – 60 divided by 12 is 5. This has overridden the normal page width that is governed by the **Paper Size** option. The reason it is not exactly five inches is that the image has been scaled and small number-rounding errors have occurred.

Change the **Print Pitch** to **10-Pica** and the same picture will print about 6 inches wide – 60 divided by 10 equals 6.

So your question is the same as asking how long is a length of elastic. ***JW***

designed to be booted from the Workbench disk as supplied by Commodore, not anyone else's version of a Workbench disk, even if that software suggests that you boot from its disk and not Workbench. If you do not boot from a proper Workbench disk it will be impossible for me, or anyone else, to help with your problems.

To get a proper BJ-10ex driver call Canon Technical Support on ☎ 081 647 4044 and ask for the free Canon Drivers disk. ***JW***

SOUNDS BAD...



I bought a second-hand Amiga 500 six months ago with a Philips CM8833 monitor, but the monitor has recently developed a "beating" sound in the right-hand speaker and total loss of all other sound output.
D McIver
New Cumnock
Ayrshire

If possible test the monitor with another Amiga and the Amiga with another monitor in order to isolate whether the problem is Amiga or monitor. If there is a fault with the monitor then a qualified TV repair technician is your best bet – monitors contain very high voltages that are potentially lethal and best left in expert hands.

If it's the Amiga then try one of the repair shops which advertise in *Amiga Shopper*. In any case, don't try to do the work yourself unless you are confident you know what you are doing. ***GW***

AMOS ANGST



I already have AMOS and I am considering upgrading to AMOS Professional. I have read very good reports about AMOS Professional, but considerable doubts have now started to creep into my mind. I phoned Shadow Software to enquire about their *Tome* extension for AMOS and was informed that *Tome* is not compatible with AMOS Professional. The guy I spoke to didn't seem too worried about this either – according to Shadow, no one is using AMOS Professional anyway! He said all the top "professional" AMOS coders are still using the "classic" version of AMOS. This seems to be a rather strange view, especially from a software house that is reliant on the success of AMOS.

If AMOS Pro is bugged, why is it that none of the reviewers has mentioned this? A list of known bugs and how to get around them would be very useful indeed and would certainly help potential buyers decide whether AMOS Professional is more trouble than its worth.

My personal view is that if AMOS Professional is half as good as the reviewers claim, then it'll still be a very good package indeed. That is, providing the product is not so bugged that it's unusable! If it is, why have Europress failed to address these problems? They have, after all, released a total of three "updater" disks for the language!
N Corrigan
Northampton

Something tells me that the person you spoke to at Shadow Software was Aaron Fothergill, who is well known for his dislike of AMOS Professional. Aaron has expressed these views to me also, but as far as I'm concerned, they're totally unfounded. I've even spoken to Richard Vanner, product manager at Europress Software, for comment on Aaron's views and Richard states categorically that AMOS Professional had no bugs that they were aware of. As a "professional" user of AMOS (I'm not sure about the "top" bit!), I use AMOS Professional and I've certainly found very few bugs in it. Indeed, I've just put the final touches to a book on AMOS programming entitled *Ultimate AMOS* (available in a bookstore near you very soon!) which includes a disk containing over 800K of source code, every single "K" of which was coded in AMOS Professional. About the only major bug that I've ever encountered is with AMOS's "Dual Playfield" command – which, incidentally, doesn't work properly under the "classic" version of AMOS either.

I think that Aaron is creating a lot of problems for himself by not making *Tome* AMOS Professional compatible. More and more AMOS users are upgrading to AMOS Pro and it's only a matter of time before another software house jumps in and fills the gap.

At the end of the day, it's down to you to decide whether or not you should upgrade to AMOS Professional. With the AMOS Pro compiler now out on the streets, AMOS Professional certainly lives up to its name. On the rare occasions I do have to switch back to to test that my AMOS Pro code is downwardly compatible, AMOS "classic" seems positively prehistoric! ***JH***

• For a full review of the AMOS Pro compiler, see *Amiga Shopper* 30. If you missed that issue, our back issues service is on page 90.

ANOTHER SERIAL MURDER



I recently bought a second-hand Citizen 120D printer. The only problem is that instead of the usual parallel interface, it is fitted with a serial one.

I have made myself a basic serial cable to connect it to the serial port of my Amiga 500 by connecting pins 7 to 7 (ground), 1 to 2, and 2 to 1 (crossing the TXD and RXD connections). This cable has enabled me to print text files, but only by copying files to SER: from a Shell because my text editor only supports parallel printers.

However, I have *Deluxe Paint*, and this has a serial driver option. The problem is I don't know the correct configuration for the printer's dip switches (there are 16) and I don't know whether I should have more wires connected in my lead in order to print graphics.

I have been experimenting with various combinations of switches. Most combinations print nothing at all, or a full page of garbage. One combination prints the top inch or so perfectly, then stops.

Is it possible for you to tell me what cable and dip switch settings I should use, and do you have an address for Citizen?
D J Butcher
Horbury Bridge
West Yorks

To get the details of the serial interface and the dip switch settings you'll need a manual. To get the manual you'll have to contact Citizen. I wouldn't write them a letter if I were you, it'll just end up on that massive pile of other letters that have yet to be answered. Phone them on 0753 584111. While you're there, ask how to go about swapping the serial interface for a parallel one. ***JW***

POWER PROBLEMS



My power supply has a fault that appears to lie in the Thyristor marked RBX44Y018. I would like to do the repair myself, but I cannot find anywhere that stocks individual components. If, in your opinion, I should have the supply repaired, where should I have it done? Alternatively, should I get a replacement unit?
Alex Baldwin
Thornaby
Cleveland

There are a number of stockists specialising in electronic spares such as this – in particular, Tandy and Maplin both have stores near you, in Middlesbrough. Maplin's mail order sales number is 0702 554161; Customer Services (non-technical enquiries) 0702 552911. You could also try Bond & Mason in Church Road, Stockton, and Burniston Electronics on Borough Road in Middlesbrough. I could not find the equivalent spare in any of the usual component lists and it might be a custom-made part, but Burniston's suggested that if you brought the unit to them they would try to ascertain a suitable equivalent.

A number of regular advertisers in *Amiga Shopper* can supply you with a replacement power supply. The trick is to shop around, although I suspect most will be selling replacement switching power supplies for around £40. It is possible to use a standard PC power supply by fitting the correct plug, but this is not an option I recommend. ***MS***

PULLING A FAST ONE?



I have purchased a MicroBotics M1230XA accelerator for the A1200. The card contained a 50MHz 68030 chip with MMU and 4Mb of RAM. I have some problems with it:
1. When I'm using software such as *SYSINFO* and *AIBB*, they indicate that the MMU is present, but not on. How do I switch my MMU on?
2. When the extra 4Mb of RAM is added, certain programs refuse to work properly. *Home Accounts 2* will not allow a date to be entered correctly. I am not using the clock supplied with the M1230XA, but the Prima clock module instead. I don't

continued on page 45

JARGON BUSTING

Accelerator – A device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed. An accelerator is useful for calculation-intensive applications, such as 3-D rendering.

Printer driver – A program that sits between any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.

Serial port – An interface at the back of the Amiga, used mainly for connecting to a modem for communications purposes. With the serial port, data is sent at one eighth of the speed of the parallel port, which is more usually used for connecting to a printer.

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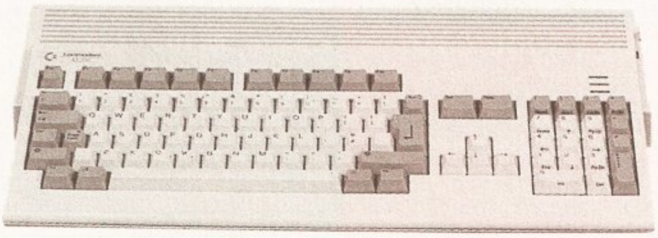
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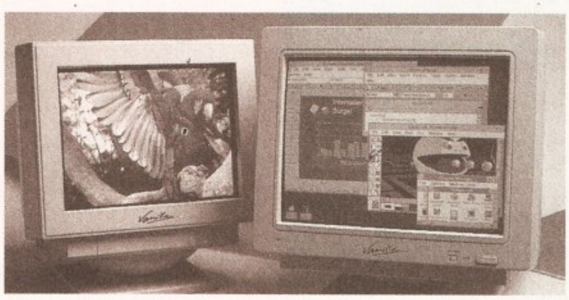
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E&OE. Please phone if in doubt.

continued from page 40

have these problems when the 4Mb of memory is not added.
Warren Jouet
Greenhithe
Kent.

Unless you have any programs that make use of the MMU, I'm afraid it's going to be one of those features of your 68030 that you will never know is there, and never miss. Programs like *GigaMem* and a lot of programmer's development tools make extensive use of the MMU, but normal day-to-day usage of your Amiga is unlikely to touch it.

With regard to the memory problem, it is likely that you have not set up your M1230XA properly using the *SetXA* tool. Make sure that you have set the memory to the correct speed. The instructions are not exactly helpful on this subject, I know, but we had much the same problem with the review board, which was solved by changing the RAM access speed to a slower setting. Also remember to remove the battery on the M1230XA if you are not using the clock feature. ***TS***

SAY AAAH...



Can you please provide an example of assembly code which will determine which type of CPU, FPU and MMU is being used, and at what speeds they are running? I can distinguish 68000, 68010, 68020, 030 and 040, as well as the FPUs, in my program, but I would like to go further and determine if the processor is an EC/LC version or if the 68851 is present. There is no documentation in Commodore's Include files for checking for the presence of an MMU, and I cannot find any information on checking CPU/FPU speeds.
Chris Brown
Croydon
Surrey

Well, if you are successfully detecting the various processor types, I presume that you are checking the **AttnFlags**, present in the **ExecBase** structure, which tells you which processors are being used and if any FPUs are present.

The bad news is that you will not be able to tell entirely accurately if the processor is an EC version or not, because quite a lot of EC030 chips have partially working MMUs. You might test one and find that an MMU is present, then make use of it only to find that it could fail because parts might not work correctly. Testing for an MMU can be done by executing MMU instructions and seeing if you get exceptions or not. Even if you successfully detect one, you *cannot be 100% sure* that it is a fully working one. Make sure you get the data sheets for all the chips, because LC means different things. The LC040, for example, does not have an FPU, but does have an MMU. (This is easy to check, because the 68040 bit would be set in **ExecBase**, but the bit for 68040 internal FPU would not.)

As for checking speeds, I can't think of any particularly reliable way, and I couldn't find anything in the documentation. However, if you know the speed of a particular instruction in cycles, then you can execute it in a fixed length of time, and then divide it out to get the MHz. Bear in mind any caches that might be operating. You can do the same thing to work out MIPS – but be more careful with MIPS: caches can come up with some extremely fast speeds which are *not* accurate, since in the real world very very few programs make good use of caches. ***TS***

PORT AND LEMON



I am a GCSE Craft Design and Technology student and for a project that I am working on I wish to link my A500 to my electronics project. For this I wish to use the joystick ports for input and the parallel port for output. Could you please tell me which memory locations I have to "Poke" in order to use the parallel port for output? I wish to use AMOS Basic to control the two ports.
Stuart Adamson
Taunton
Somerset

As it stands, AMOS is perhaps not the best language to directly control the Amiga's parallel port. A much wiser solution would be to treat yourself to SwitchSoft's useful little Amiga Input/Output unit, which not only provides you with 11 digital outputs and 13 inputs, but also comes complete with full instructions on how to address the I/O unit from within AMOS. This little box of tricks is available for £27.95 from SwitchSoft, who can be reached on 0325 365773. ***JH***

DO IT LEGALLY



Whatever I do with page lengths and form lengths in *TransWrite*, either through the print requester or through the formatting codes, I cannot get a 70-line A4 printout. All I get are 11-inch prints. What am I doing wrong?

The other problem I have is with the *TransSpell* spelling checker. I have made supplementary files for inclusions and exceptions to the dictionary but I can't find a way to make them load automatically into the dictionary when I start it up.

Could you please make the answer simple? As a chronologically-disadvantaged person I need to be led by the hand through some things.
Chris Marquis
Waltham Chase

You didn't tell me what make and model of printer you are using, so it is impossible to be specific with your first problem. But if you hit the **Preferences** button in the *TransWrite* **Print Document** requester, select **US Legal** (which is a 14-inch form length), select the tick button and then enter **70** in the **Lines per Page**, you'll find that you can now print 70 lines per page. Keep in mind that you may not be able to fit 70 lines on a page with your particular printer – it will depend on what size the printer-imposed top and bottom hardware margins are. If you had told me what printer you were using I could have been more specific. (For more on page length problems, see the feature in *Amiga Shopper* 29 – it's available on page 90 if you missed it.)

Pages 38 and 39 of the *TransWrite* manual ("Special TransSpell Options") tell you how get the spelling checker to load with default user and reject (exception) dictionaries by adding Tool Types to the *TransSpell* icon. ***JW***

JARGON BUSTING

CPU – The Central Processing Unit is the part of the Amiga that controls everything else. It executes program instructions and performs general mathematical computations.

FPU – A Floating Point Unit is a chip that will work in conjunction with the CPU to carry out complex mathematical tasks. Carrying these out in hardware rather than software greatly speeds up the running of certain programs, particularly those that make use of 3D graphics.

MMU – A Memory Management Unit, included with some processors, gives a computer greater flexibility over the way it manages its memory. It's useful for people with the virtual memory program *GigaMem*.

CHUNKY GRAPHICS



I bought an A1200 and *Deluxe Paint IV AGA* so that I could create stunning graphics like those I've seen in *Amiga Shopper*. But when I try to draw, the pictures look very blocky and jaggy.

To try to remedy this I've read all I can about monitors and I've come to the conclusion that it must be the TV I am using in place of a proper monitor (though it could be the crappy mouse which comes with the A1200). So I plan on buying a monitor and I wondered if you could tell me which is better, the Commodore 1960 or the Commodore 1942?
NAP
Pontefract
W Yorks.

First, I doubt very much that your TV is the culprit – I bet it shows TV programmes okay. I'd be more inclined to think that you may be working in a lo-res mode, for instance 320 x 256, where the pixels that make up the image are larger and as a result tend to produce the stepped edges that you describe. Try working in a higher resolution, such as hi-res interlaced (640 x 512) and see if this helps before you start thinking about buying a monitor.

Of course buying a monitor *is* a good move, because you'll be able to feed it with the much cleaner RGB output from the Amiga, but you may well find that a Philips CM8833 or Commodore 1084 monitor will solve your problems – and more cheaply than buying a multisync such as the 1942. Incidentally, the 1960 is no longer in production, so the 1942 would be a better buy. There is also a 1940 monitor, which has a larger dot-pitch than the 1942 – that is, fewer dots per inch.

As for blaming the mouse, forget it. Although mice can be hard to get used to with paint packages, and controlling them takes practice, I think it's probably the least of your worries. Unless it really is broken, of course.

If you are running out of memory (2Mb isn't always enough) try reducing the number of colours you have in the palette, rather than reducing the screen resolution, because this will help avoid the jaggies too. ***GW***

PUSSY PEDIGREES



I am a cat breeder, and now that I'm retired I have the time to produce pedigrees on my Amiga instead of laboriously printing them by hand on pre-printed layouts.

A pedigree is a landscape A4

document which has several lines of text down and across it. Below the text is the box which contains the family tree. The box is divided into four columns. Each column has a heading – parents, grandparents and so on. The first left-hand column is divided into two boxes. Each box contains the registration number, sex, name, breed number, colour. The second column is divided into four boxes with contents as before. The third is divided into eight boxes, with the contents limited to sex, name and breed number. The fourth is divided into 16 boxes, the contents limited to sex and name.

Typefaces are likely to be variable, and the correct selection makes for an attractive document.

Problem. I have a Star LC240-200 printer. I also have *Wordworth 2*, and that doesn't allow for landscape printing. I have *Professional Page 2* and I cannot find a way with this of rotating and printing with a dot-matrix printer. What would you advise?
John A Churchill
Letchworth
Herts

This is the kind of page that would be particularly difficult to design in a document processor like *Wordworth 2* or *Final Copy II*. What you need is a dedicated desktop publishing program that enables landscape A4 designs on the screen to be rotated by 90 degrees before sending them to a portrait A4 printer. Version 2 of *Professional Page* doesn't support this feature, but the latest version (4.1) does. So does the rival *PageStream* DTP package. Take your pick, either will do the job perfectly well.

Rotating the printed output of bitmapped image data (DTP documents are printed as graphics, not text) is one of those things that consumes lots of memory. At some point two versions of the image data must be in memory at once. First the software will have to construct the upright image data in memory, then it will have rotate that image data and store it again before sending it to the printer. You may very well find that you'll need more than the 3Mb of total RAM you have to produce rotated A4 output from *Professional Page* and *PageStream*. ***JW***

A600 QUESTION TIME

GENERAL

I have recently bought an Amiga 600.
1. Can I use any external drive with it?
2. Do I really have a Workbench 2.04 machine or simply an A500 Plus in an A600 case?
3. I have seen 1Mb expansions, 2/4Mb cards for sale. In theory, if I fitted a 1Mb trapdoor expansion and a 4Mb PCMCIA card, will this give me 6Mb of RAM? Is this the maximum amount of RAM that the A600 supports?
No name supplied

1. You certainly can use any external 3.5-inch disk drive with the Amiga 600, providing that it has been specifically designed for the Amiga. The Amiga requires an extra bit of circuitry that handles the "auto disk sensing" feature of AmigaDOS, so a drive designed for the PC-compatibles or even an Atari ST will not work without this extra board. All Amiga drives have this built in as standard, so go for a drive that is advertised as Amiga-compatible and you won't go far wrong.
2. The answer to your question is a bit of both. The machine you own is technically almost exactly the same as an A500 Plus (apart from the extra PCMCIA card slot that the A600 offers) but the A600 uses what is known as "Surface Mount Technology" (SMT), which has allowed Commodore to squeeze the A500's board into a smaller casing. The version of Workbench and Kickstart bundled with both machines is almost identical too – the only difference between Workbench 2.05 (bundled with the A600) and Workbench 2.04 (bundled with the A500 Plus) is that 2.05 supports the A600's PCMCIA slot.
3. Yes – adding all the cards that you've mentioned will give you a total of 6Mb of RAM. And yes, 6Mb is the maximum amount of RAM that an A600 can handle. ***JH***

SO NOW YOU C

CODING

I am a student with about £30 to my name, and I have taken an interest in C. I have a copy of North C, and *Mastering Amiga C* by Bruce Smith Books. I require some form of instruction manual, which you would expect to get with any programming language. I have been following your series on C, but I do not wish to spend over £200 on SAS C. Do you have any suggestions?
Chris Webb
Bursledon
Southampton

Recently, in the *Amiga Shopper* C programming series, we changed over to DICE by Matt Dillon. This is

HIT THE HARDWARE

CODING

I have recently started to learn assembly language with the primary aim of coding games and demos. My problem is that, while I can find many books which deal with assembly programming through the operating system, I cannot find any hardware-orientated programming books. I resisted buying Abacus's *System Programmer's Guide* because you have said that it contains a very bad programming style which is incompatible with Workbench 2.00 and above. Surely it is possible to program the hardware directly and still maintain a high degree of compatibility? After all, most new games hit the hardware and still work on Wb 2.0 and above.

I have the hardware reference manual, but it does not state how I will be able to take over the machine, making the provided examples no use at all. I would be most grateful if you could recommend some books on the subject, and specify which of the Rom Kernel Manuals are necessary, as well as provide some source code to shut down the operating system. Having looked at the RKMs, it looks like programming the hardware is easier than programming through the OS.
Krishna Kotecha
Kenton
Harrow

This is a very odd subject. In theory, no-one should access any hardware registers directly, ever, at all, and the hardware reference manual should never have been written. Everyone should use the OS, and there would be peace throughout the world and everyone would have just the right amount of money. In practice, of course, things never work this way. The Amiga OS is not fast enough for games and demos unless you have Kickstart 3 or above (which is much faster, and contains a lot of functions that games programmers would need). There is no hardware guide for the AGA chipset, so if you want to use 256 colours, you will need to go through the OS.

The degree of compatibility is a different kettle of fish altogether. If you are going to use the information in the hardware reference manual, there are some basic things you can do to help yourself out in the future with regard to compatibility. Here are a few pointers:

• *Always* allocate your memory using the **exec.library**. *Never* take memory without properly allocating it. Also, allocate the right type. Bear in mind that the graphics hardware cannot access anything other than Chip RAM.
• If you need interrupts, allocate them using **exec.library**.
• For blitter access, call **OwnBlitter** before using it, and **DisownBlitter** afterwards. Always use Commodore's **WaitBlit** (in the **graphics.library**) rather than your own versions. Commodore's is very fast and does not corrupt any registers. It is as good as any you could write, and is guaranteed to work with *all* versions of the blitter, unlike a lot of blitter wait code I have seen.
• Don't disable the OS. Simply stop it from hogging the CPU. Do this by raising your task priority to a large value – say 20 or 30. This will stop the rest of the OS from doing anything without killing it, so essential OS interrupts and code will still occur.
• If you *are* going to use your own copper-list, execute these instructions before installing it:

```
        suba.l     a1,a1
        GRA        LoadView      ; Load a ☛
blank view - i.e. clear display.
        GRA        WaitTOF
        GRA        WaitTOF ; Wait for the ☛
LoadView to definitely take effect.
                   now install copper list...
```

Where GRA is a macro that calls the graphics.library. You'll have to open it first. I have my GRA macro set up like this:

```
GRA:               macro
                   move.l  GraBase,a6
                   jsr     _LVO\1(a6)
                   endm
```

• Don't busy wait. For example, don't perform a delay by looping. Time it, because different processors operate at different speeds.

For more advice and information on interrupts and memory allocation, consult the ROM Kernel Manual on *Libraries*. Ideally, you would write your games using the OS, but to maintain Workbench 1.3 compatibility and get the speed you want, you may find you have little choice. However, a few basic steps (like those outlined above) will help ensure your programs which will run on future Amigas, regardless of processor and chipset. ***TS***

available on various Fish disks from good public domain libraries, or if you can wait a month there may be something to interest you on next issue's *Amiga Shopper* cover disk (a hint to the wise). The version used in the C programming articles in *AS* is 2.06.21. As for a good instructional book, the best one I can recommend is the standard reference book, *The C Programming Language*, by Brian Kernighan and Dennis Ritchie, the designers of C. It is currently in its second edition and is published by Prentice Hall. The ISBN is 0-13-110362-8. But again, you might find that something interesting just happens to be bundled with *Amiga Shopper* next issue... if everything goes according to plan. Better reserve your copy with your newsagent now, or turn to page 98 and think about subscribing. ***TS***

NOT INCLUDED...

In the listing window.c in your C programming article in *Amiga Shopper* 30 there is an include file called proto/all.h, and I cannot find this. I tried using all_protos.h, in the clib directory but DICE finds several errors in its own stdio.h file. Could you please clarify this matter for me?

It would be helpful if comments could be made about what functions in the listing require these includes, particularly one such as all_protos.h which includes all the prototype includes.

I hope you can shed some light on this – it is frustrating not being able to get the thing working!
CG
Bristol

I must apologise. In the effort to get the program working, I included an old file called proto/all.h (which is now superseded by the clib/ drawer, as you correctly found out). This simply includes everything, thus ensuring that any OS call I make has a prototype. The result of this was that the program took much longer to compile than necessary. Replace the line:

```
#include <proto/all.h>
```

with this (which needs to be typed in all as one line):

```
#include
<clib/intuition_protos.h>
```

This is because we're only using OS functions from **intuition.library**. If you have problems with your **stdio.h** file, in conjunction with the includes, you might have an old version of DICE. I am using 2.06.21 to write the C programming series, and all listings are compiled *and* tested with this version. ***TS***

NOT VERY INTELLIFONT

1. When I try to run Intellifont a requester states: "Bullet not correctly installed, please re-install. [File FONTS:_Bullet/if.fnt] missing". What is going on?
2. Later versions of Workbench 3 have *Install* and *AmigaGuide* on disk – but mine does not, so I bought Fish Disk 870 to add these items to my hard disk. There is an ample supply of text files but none with a step-by-step guide for installation.

In the public domain section it stated that the *LhA* archive has to be extracted from the disk and installed with the *Installer*. I can find none of these! For instance the AmigaGuide drawer only contains AmigaGuide.LHA plus five text files. Any attempt to open this icon results in an "Execute File" requester with AmigaGuide.LHA on the command line. Pressing OK just results in an Output window stating that the file is not executable. This is also true of the Installer program.
A D Mayfield
Ryddinton
Nottingham

1. This is a thorny one – and I must confess it's the first time I have come across this bug. I can only assume there was either something wrong with your disk set (as your second query suggests) or possibly that the full font set has not been installed for some reason. Using **Show...All Files** on the **Icons** menu, find the offending drawers (**_Bullet** and **_Bullet_Outlines**) on your master fonts disk and copy them into the **Fonts** directory of the hard disk. With luck, that will cure it.
2. Nothing is ever quite as simple as it appears. It's all too easy to assume that everyone knows what *LhA* is, never mind what it does. The icons you're referring to are not executable programs – even though Workbench might think they are. They're "archives" produced by a shareware archiving program called *LhA*. Workbench tries to execute these because they are marked as "executable" by their protection flags (see **Icons...Information**). Unfortunately, this flag defaults to ON for every file AmigaDOS creates – which is one of its endearing little eccentricities.

The cure is simple enough, although you will have to dip into AmigaDOS for a while. First, you will have to find a copy of *LhA* – you should be able to get it from whoever sold you the Fish disk, or it may even be on the disk already. It has been on some past *Amiga Shopper* cover disks as well. Here's how to find out if you already have it in your collection:
1. Open the Shell icon.
2. When the prompt (1.SYS>) appears, enter the following:

```
SEARCH DF0: LHA#? ALL FILE
```

Insert Fish870 in your internal drive and press <Return>. AmigaDOS will hunt through the entire disk and tell you if the file is there like this:

```
Fish_870:C/LHA
```

3. If you cannot locate *LhA* (LHArc) on that disk, try some others from your PD or shareware collection – or the cover disks from *Amiga Shopper*. If you manage to find a copy, use the Workbench to find and copy it from disk your hard disk's **c:** directory.
4. Get the offending disks and drag the icons marked "xxx.lha" into the RAM disk.
5. Open your Shell and enter this:

```
CD RAM:
LHA e "xxx"
```

where "xxxx" is the name of the icon concerned (without the LHA part). (If you have a copy of LHArc, enter that in place of LHA.) For instance, if you had copied **Install.LHA** to the RAM disk, you would enter:

```
LHA e Install
```

or

```
LHArc x Install
```

6. This command should take all the files from the archive and leave them on your RAM disk. It is up to you to move them to the correct place on your hard disk drive. (*LhA* can do this for you, but I do not want to leave that to a chance typing error.)

A basic knowledge of AmigaDOS is still the only way to master the Amiga – it gives you access to a huge amount of free and low-cost software, and enables you to harness the power of your machine. ***MS***

WHICH MONITOR?

I've had an A500 for three years and I've just bought an A1200. Now I have a couple of questions:
1. I'm currently using a TV for display but I need to get a monitor. I've been wondering about the CBM 1960 but I heard that the picture quality is bad. Is this so?
2. I also want a hard drive and a CD32 drive. Will the A1200 power supply be enough for both of these? If not, will my old A500 PSU do the trick?
Joseph Robinson
Lymington
Hampshire

1. The CBM 1960 is no longer being made (and it wasn't that good anyway, as you heard), so your better bet would be for either a CBM 1940 or 1942 – the 1942 is better, but more expensive. But do you really need a multisync? Of course you'll get flicker-free images, but you could save money and buy a CBM 1084 or equivalent instead, and put the saved money towards your hard drive.
2. Unless you have information to the contrary I think you'll find that the CD32 is a stand-alone unit complete with its own PSU (and not yet able to be connected directly to another Amiga), so don't worry about this aspect for the time being. If you mean a CD-ROM drive, these are not available for the A1200. As for hard

JARGON BUSTING

Assembler – A program which converts an assembly language program written in words (well, almost) into the machine code numbers that the Amiga's 68000 processor understands. Writing programs in assembly language ensures that the best possible speed and memory efficiency are gained from the machine.

Blitter – Part of the Agnus chip which can move and alter areas of memory (specifically graphics memory) at very high speed, without intervention from the central processor. As a result, it is used extensively for animation.

Include files – Supplied by Commodore, provide all the offsets needed to access system library routines, and the formats for all system structures.

drives, if you buy the recommended types of IDE drives for your A1200 then your existing power supply should cause no problems. ***GW***

STEPS TO HEAVEN

I started to read the article in the September issue of *Amiga Shopper (AS* 29) on desktop publishing and when I got to the bit saying "When you print multiple pages does the text creep further and further down each page?" I screamed "Yes!", thankful that after six months puzzling over this problem all would now be revealed.

But after reading and re-reading the article, my cry of joy turned to a scream of anguish! Nowhere could I find the answer to the only question I wanted answered. Please put me out of my misery and give me the reason for this problem. It occurs with the Canon DeskJet printer I borrow from work on occasions, using *Wordworth* 1.0.
Paul Matthews
Blackpool
Lancs

You have confused the issue by claiming to be using a "Canon DeskJet", which is like saying you drive a Ford Metro, so it is difficult to give you specific help. I'm going to guess that because you mentioned the manufacturer's name you're actually borrowing a Canon bubble jet from work, not a Hewlett-Packard DeskJet. And I'm going to guess that the model of bubble jet you are using is the BJ-10.

Set up your Workbench printer preferences as described in the "Right a bit, down a bit..." article in *AS* 29. (Anyone who missed that will have to order a copy on page 90 of this issue.) The BJ-10 has hardware top and bottom margins of half an inch, so enter a paper length of 63 lines, which works out to 10.5 inches at six lines per inch (lpi). Make sure you have **Fanfold** selected as the **Paper Type** in your Workbench 1.3.2 printer preferences.

Wordworth 2 understands about printer hardware margins, but *Wordworth* 1.0 does not, so you'll have to compensate manually by reducing your on-screen page length to 10.5 inches. Select **Continuous** when printing from *Wordworth* – don't select **Cut Sheet, Sheet Feeder** or anything else like that. Follow these instructions and the top line on each page in your multi-page documents will not start lower and lower down the page.

The reason this happens is because of those half-inch hardware margins that the BJ-10 insists upon. This means that you have not got 11.69 inches of paper on which to print, only 10.69 inches. If you select an A4 page size in *Wordworth* (69 lines of text at 6 lpi), the bit at the bottom of each page, which is normally blank (the software bottom margin), cannot be printed on the very first page of the document, so the printer feeds that page out, feeds in another page, prints the software bottom margin of the first page, and then starts printing the next page, which normally begins with a blank area, the software top margin. As more and more pages are printed, so the printout gets more and more out of step. Some printers feed the "software bottom margin" pages out before printing the next page of text, resulting in a blank sheet every other page of the document.

This was explained in the "Down a bit, right a bit..." article quite clearly, and I'm puzzled how you could have missed it. Page 58, bottom left-hand corner of the page, the paragraph beginning "But what about the bottom margin?". Go read pages 57 and 58 again; the rest of that article is specific to *Professional Page, PageStream, Final Copy II* and *Wordworth 2*. ***JW***

£$?#* KEYBOARD, AGAIN?

In *Amiga Shopper* 29, your reply to Ralph Crosby suggests that the problem of Locale keyboards not being recognised can be cured by adding the PATH keyword to the KEYMAPS assignment in the Startup-sequence. I have a similar problem, only my keyboard appears correctly in LOCALE. Is this a hardware fault?
Peter Cassidy
Belfast

It always galls me when basically good (and tested) advice fails for some reason on a different machine. I find it highly unlikely you have a hardware fault however, so you can rest easy there. When you say "LOCALE", you do mean "INPUT", don't you? LOCALE sets the country, but not the keyboard layout for that country – the layout is determined by INPUT. If you have made the correct settings and are sure your keyboard is wrong (the only sure test is to type into AmigaDOS) then something else is amiss. You could try adding the following to your Startup-sequence after IPREFS:

```
C:SetKeyBoard KEYMAPS:gb
```

If that still doesn't work, send me a copy of the disk c/o *Amiga Shopper* at the usual address and I'll do my best to sort it out. ***MS***

COMPACT PROBLEMS

I bought a Commodore A570 CD drive for my machine in April 1993 and it had given hours of trouble-free service until I decided to upgrade the RAM. I bought a second-hand Power Computing 8Mb expansion (populated to 2Mb) planning to connect the A570 through the RAM expansion's "full through port".

The RAM worked fine, but the CD drive refuses to work at all. It appeared in one of the boot menus, but totally refused to work. Power's technical helpline tell me that the A570 is not compatible with most throughports. Is there a cure for this? Failing that, when will Commodore release a RAM expansion for it?
Martin Frost
Ipswich
Suffolk

A cure? Probably not. Commodore have only made two main expansions for that slot – the A570 and the A590 – and neither has a throughport. A grim message in itself. My experience has been that most throughports do not work with DMA-based devices such as the A590 – I can only assume the A570 falls into that category too. Supra's RX500 8Mb expansion suffers from exactly the same problem – so the finger should, perhaps, be pointed in Commodore's direction.

As for Commodore's plans: pass. (But I'd conjecture it seems unlikely.) ***MS***

INVADERS FROM NORTHALLERTON

I am writing a *Space Invaders* style game in AMOS. The demo is almost finished but I am stuck on how to get the missiles to fire from the enemy ships. I have tried to make them work but to no avail. And how do you get rid of the orange screen when you press the run key or go into "Direct Mode" before you load any files? You can see it when you compile your work.
Jason Howells
Northallerton

I've never actually tried to write a *Space Invaders* game, so what I'm about to tell you is based entirely on theory. I recently wrote a horizontally-scrolling shoot-'em-up game, however, which employed a routine that could quite easily be adapted. My routine simply generated a random number between 1 and 4 that was used to decide whether the aliens wanted to actually fire a missile. If the value returned was equal to 1, then a missile is fired – this gives a one in four chance of a missile being fired. In order to decide which ship actually fires the missile, simply generate another random number that points to one of your aliens. If, for example, your attacking alien force uses computed sprites 8 to 48, then simply generate a number between 1 and 40 and then add 8 to it to find out which ship should fire the missile.

The AMOS Compiler should have a switch that allows you to turn off AMOS's default screen. Failing that, why not simply perform a "Screen Close" at the start of your program? ***JH***

HOW MANY FLOPS?

I have recently purchased a 4Mb RAM board for my A1200, complete with a 33MHz accelerator (68882). My problem is not knowing whether the 68882 is running or not. I have the program *Sysinfo*, which recognises its presence and tells me it is running at 0.64 MFLOPS. This means nothing to me. What is an MFLOP?

Secondly, is there any way I can do a test which would enable me to visibly see the increased speed I am getting from the processor? I have done some tests in *Vista Pro* in which I rendered a picture both with the processor installed and with it not installed, but the results were

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JARGON BUSTING

Accelerator – A device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed.

Compiler – A means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. The compiled program is generally much faster than its interpreted counterpart.

Startup-sequence – A program which is executed every time the Amiga is switched on and after every reset. It sets up the system so that it is usable from Workbench, and may be customised by those who have unusual hardware or software requirements.

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the same each time – 13 minutes – which leaves me to believe all is not well, because surely it is with rendering a picture that an accelerator will give great benefits. That is what I believed anyway. If not, I have spent a lot of money for nothing.
R J Ayers
Mansfield
Nottinghamshire

MFLOPS is a standard benchmark for measuring the speed at which the co-processor, in this case the 68882, is working. It stands for Millions of FLoating Point OPerations per Second. In other words, in one second your 68882 can perform 640,000 operations involving "floating point" calculations – which are calculations accurate to varying decimal places (so the decimal point "floats").

Referring to the 68882 as an accelerator is technically incorrect, although in some ways the speed is increased. The 68882 is a co-processor, intended for calculating floating-point mathematics, where the normal 680x0 chip in your Amiga would be clumsy and slow. Generally, FPUs are useful in number-crunching activities. Unfortunately, software has to be written specially for FPUs, so programs like *Vista* do not actually make use of them. There are, however, many programs that do make use of a 68881/2, such as *Imagine 2(fp)*, which is greatly improved by this option in both rendering time and wire-frame construction time.

Perhaps the best way to graphically see the increase in speed due to the 68882 co-processor is to run a shareware program called *AIBB* (Amiga Intuition-Based Benchmarks), which will conduct a series of tests, one of which will ray-trace a beach ball. The picture is drawn many times faster with an FPU (Floating Point Unit – the 68881/2). AIBB will then display a bar chart showing the performances of other machines against yours. We reviewed *AIBB* back in *Amiga Shopper* 25 – if you want to get hold of a copy for all the details, turn to page 90. ***WR***

ASKING THE IMPOSSIBLE?



I am interested in making an educational video on astronomy for use in schools. I have already made three 16mm films but I find it much easier to make animations on my Amiga with *Deluxe Paint IV AGA*.

I already have several completed shots saved on my hard disk – one of which is 1,500 frames long. The problem is that I can't get any help or advice on how to transfer these anims on to a blank VHS tape. Can you help? Am I asking the impossible?
C W Carson
Chadwell Heath
Essex

No, you're not asking the impossible! There are several ways to solve your problem. I'm assuming that you have an A1200, judging by the spec you give and the peripherals you have (though your Answers form says you have a six months old A1000!). If this is so, then the simplest way is to connect the composite video output from your A1200 to your video deck, making sure that the deck is selected for external input (a switch marked "Camera/Tuner" or similar may require setting), put in an unprotected tape and press **Record**. Then play your animation back and it should record on to tape.

A second method is to connect a genlock or modulator to the Amiga's RGB port and then take the video output from there to your VCR – though since the A1200 already has a video output this is a waste of time and money unless you require S-VHS or Video8 output.

Thirdly, you can take the modulated output from your A1200 (the output that you plug into a standard TV) and plug it into your VCR's aerial socket instead of the usual TV aerial. Make sure the input switch is set to "Tuner" this time and record as usual.

And that's all there is to it! If you are at all in doubt about how to record with your VCR I suggest you study the manual, if only to ensure that you are using the right connectors, switch settings, and so on. But otherwise I expect you should have no trouble. ***GW***

CANON WORRIES



I am planning to buy a Canon BJ-200 printer. Is there a suitable printer driver on the Workbench 3.0 System disks? Will this driver enable me to print at 360 dpi? Is there a driver in the *Turboprint Professional* package which is compatible with the BJ-200? You have advised several readers to buy *CanonStudio*. Will the *CanonStudio* drivers be compatible with software like *Wordworth 2* and *Professional Page 3/4*? Is *Flexidump* compatible with the BJ-200?
Sam Aitcheson
Aberdeen

Workbench 3 does not come with a suitable driver for the BJ-200, only the BJ-10/20. And let me answer all your other questions by saying that Canon UK were actively involved in the development of *CanonStudio*, and the drivers and programs that come with this package are all you need, and the best drivers available, to operate your BJ-200 with the Amiga. Any software that prints in the normal Amiga way through Preferences (and that includes the programs you mention) can use the *CanonStudio* drivers and enhanced preferences options. ***JW***

CAP IT ALL



I have been an owner of an A500 for a year now and it has been perfect, but lately this marvellous machine has been driving me crazy. To be more precise, my computer keeps crashing. The caps lock LED switches itself on and the keyboard will cease to respond, although the mouse, disk drive and hard disk seem to work perfectly. If during the crash I need to type anything, I am lost because it will only return to normal after I re-boot. This occurs with any software and at any time and completely without warning. When it happens I sometimes press the GVP hard drive against the Amiga or press the expansion port and the caps lock LED will blink but the keyboard will still not work. Please can you help me?
Sergio de Pina
Brazil

It sounds to me that the keyboard logic circuitry inside your Amiga has developed a fault. Take it along to your local Amiga repair agent and they should be able to remedy the fault. ***JH***

UNPREFERABLE PREFERENCES



I have invalidated the warranty on my A1200 by fitting an 80Mb hard drive, but I have recently heard about early machines fitted with faulty modulators and I suspect I might have one. With an eight-colour, PAL Workbench (set from ScreenMode Preferences) certain applications refuse to work. It happens with programs such as *TDM*, *Uedit*, *Edword* and *Maxiplan*. I can still use them provided I move Workbench to the front of the display, then pull it down to reveal the program behind. I would like to know if my machine is faulty or if this is some peculiarity of the AGA chips. The problem does not occur with *DPaint AGA* unless I change screen format a second time.
Andrew Greany
Perth
Scotland

This has nothing to do with your modulator – this is bypassed in your setup by feeding the television directly through its SCART socket. It also has less to do with the hardware and more to do with a software problem. The programs you mention pre-date the AGA chipset and will not be aware of some of the subtleties required by the AGA support software in ROM. To be brief, this just sounds like the sort of bug you'll have to live with until (if) better versions are released – although you could try running Workbench in four colours and configuring the software to run on that screen instead. ***MS***

BIG PROBLEM



I own an A500 with an A590 connected to the throughport of my 2Mb SupraRAM 500RX, with this is in turn connected to the A500 bus. I have successfully carried out a conversion giving 1Mb Chip RAM and (I know you don't approve of this) a switch to allow me to switch between 512K and 1Mb of Chip RAM. My computer has had new CIA chips fitted (odd and even), which proved satisfactory.

On booting up from a cold start with 1Mb of Chip RAM enabled, the computer crashes when carrying out a graphical task. This can range from opening the Amiga copyright window through to a menu selection from the Workbench screen or even just running a program. This is not a

JARGON BUSTING

Archive – A collection of files (and directories) all held in a single file for easy transfer between systems. Archives are usually compressed by special techniques so the whole is somewhat less than the sum of the parts.

Genlock – A way of slaving one video source (say, an Amiga) to another (say, videotape) in order to synchronise their signals to allow stable wipes, mixes and other effects including overlay between the two sources.

RAM – Random Access Memory is used to hold programs and their temporary data while they are being executed.

Shareware – A try-before-you-buy system of software marketing regulated by individual authors.

fixed routine time wise. It may load Workbench and then crash or get as far as the copyright window. When a crash occurs, the computer just locks up without guruing. It may take ten or more attempts before I am able to use the machine normally.

If, however, I boot up with 512k Chip RAM, the computer will commonly get to the copyright screen and crash, causing the screen to go black with rolling diagonal lines and a squealing noise from the television. But again it may boot up, working normally before doing this.

I also have problems with running some programs in that they will work on a friend's machine but not mine. I feel that this problem is to do with the Chip RAM upgrade, but I took the machine to two different people who both said that this is not the case and that they had no trouble in getting the machine to work. I have checked the speeds of the memory chips and all add-ons and these all appear to be fast enough. A friend has suggested that it is possible that I may need a new Gary chip.
J Douglas
Ashford
Kent

Without actually testing your set-up, I'm afraid it is almost impossible to give a diagnosis based upon the information you gave me, but I can suggest that you try a few different things. First, I would recommend that you try out your friend's power supply on your machine, seeing as the fault does not seem to fit to any time routine. Power supplies are often the culprits behind inexplicable errors. If this is not the problem, static damage to your Agnus chip could result in this kind of failure, or damage to memory chips. You can check this if you can somehow run a memory checking program on your computer, checking each megabyte in return. Try connecting your computer up without the SupraRAM 500RX attached. Generally, because the fault seems hard to pin-point, maybe replacing the Agnus and Gary chips could be the solution to the problem. In cases like this, it has to be a matter of trial and error to find what is causing the trouble you're having. ***WR***

PAINT POSER

CODING

Following *Amiga Shopper's* AMOS tutorial I have been writing my own version of a paint program. I am trying to use a filled paint command with a specified range of colours like in *Deluxe Paint.* My problem is that I don't know which parts of the screen should be painted from where you click the mouse. Could you please explain in AMOS how I can work out which areas of the screen to paint or is there a way I can use the AMOS "Paint" command to do this?
Richard Geraghty
Co. Dublin
Ireland

The easiest way to fill an area with colour is to use the AMOS **"Paint"** command with its optional mode one setting – this stops the fill as soon as AMOS encounters a pixel that is a different colour from the colour that you're painting over. If you do want to add a "dithered" fill, however, this is considerably more involved. I would personally use the AMOS **"Point()"** function to find out what areas of the screen should be filled. This issue our AMOS paint package project is on page 101 – stick with the series and we'll take you through how to program all the important functions. ***JH***

FREEZING BUGS

SOFTWARE

I have just updated my AMOS Pro to version 1.11. Now when I am using the editor or when I am entering data into a home-produced AMOS program, I frequently get the keyboard freezing up. I never had this problem with the original AMOS Pro. Is there a known bug in the update or could it just be my geriatric machine? Not that it has given me any trouble before!
Alf Denham
Bristol

AMOS Pro version 1.11 did introduce a couple of new bugs that could explain the problems you're

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CODING

TOBY SIMPSON DEBUGS ANOTHER READER'S PROGRAM

Author:	**Maurice Scorey**
Program:	**MFM Decoding**
Language:	**Assembly language**
Fault summary:	**Amiga crashes when program is run**

This is quite an interesting one. The author has written an assembly language routine to decode MFM (Modified Frequency Modulation) data. This is the raw data that comes off floppy disks before it is converted back into normal information. In normal circumstances, this is done transparently by the operating system. The program responsible for this, the **trackdisk.device**, does this by using the blitter. Decoding MFM is a reasonably processor-intensive and laborious job that the Amiga's blitter can do much faster in most cases – it also frees up the CPU to be doing something else.

There are few reasons why anyone would ever need to deal with raw MFM data themselves, unless a disk utility of some sort or a custom disk loader was being written. Having looked carefully at Maurice's source code, I cannot work out what the reason for it is. If it *is* a disk loader, there is certainly no reason these days to write one. This is true particularly with games and demos, seeing that people expect to be able to put games on hard disks, and custom disk loaders prevent this – and also, for the most part, cause compatibility problems with different Amiga drives. (Some "clever" people who wrote games in the late '80s on the Amiga tried to speed up disk loading considerably using various tricks, including stepping the disk head faster than it was rated to do. On most Amigas, this worked, by luck rather than judgement; on some, however, it caused all sorts of strange problems, including the possibility of a damaged drive!)

> The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

Although this program was well commented, it took me nearly a day to entirely figure out what was causing it to crash. There were numerous reasons in the end, some less serious than others. The problem I had was not being able to follow what was going on. Although each line was commented, functional groups were not – so although I could see a line commented like this:

```
move.l        #$40004,bltbmod(a0)
Set modulo for a and b
```

I did not know anything about the values, how they were derived, or what they actually did. You can easily get "carried away" commenting programs, commenting every line and explaining what it does, even when it is extremely obvious – and in these cases, you're not actually helping yourself. The key to good self-documenting code is to comment functional groups as well as single instructions of importance, for example:

```
;
; — Signal our task and let it
know that we've finished blitting
....
```

Another thing that can help make programs easier to understand is usage of macros in the right place. When calling OS routines, it is a good idea to have a macro that will load the A6 register for you, and call the routine. This means there is one less thing that you can mistype. Here is a macro to call a graphics library function:

```
GRA:  macro
      move.l    GfxBase,a6
      jsr  _LVO\1(a6)  ; Macro to☛
  call a graphics.library function
      endm
```

Using macros in this way helps to make programs more readable, and they become neater. Another thing that would have helped to make bug-hunting in this particular program easier, would have been if proper structure offsets had been used, rather than fixed numbers. This is part of the code that set up a blitnode structure:

```
      Link  A2,#-$22   ;Make ☛
Space On Stack
      Movem.l  D0/A0-A1,-$E(A2)☛▼
;Enter Length/Source/Dest
      Lsl.w #$3,D0      ;Length ☛
*6 = N0: Rows
      Ori.w #$02,D0     ;2 Words ☛
Per Line
      Move.w   D0,-$18(A2)   ;Val☛
ue For Bltsize
      Move.l   #UnCodeData,-$1C☛
(A2)  ;Enter Address Of ☛
Function
      Lea   -$20(A2),A1       ;Add☛
ress Of Bltnode Structure
```

This section could have been almost self-documenting if the **hardware/blit.i** file had also been included and used. Then, instead of meaningless values like **-$18** and so forth, real names for offsets could have been used, like **"bn_blitsize"**. This would have reduced the scope for making typing errors.

Also, for programs like this, I would personally not recommend allocating space on the stack for a structure like this, because it tends to get confusing. One thing frequently forgotten is that space allocated on the stack is uninitialised – that is, it contains random data. This means that unless you remember to set everything to what it should be, you can get undefined results, which was one of the things going wrong here. I

encountering. I'd suggest you contact your local PD supplier for a copy of the AMOS Pro 1.12 updater disk. This fixes a the bugs that 1.11 introduced and a couple of bugs in the original that 1.11 missed. Better still, why not buy the AMOS Professional Compiler? That program includes yet another updater that takes AMOS Pro up to version 2.0. I've yet to find any problems with it. ***JH***

ROCGEN RUMBLE

VIDEO

Since I replaced my A500 Plus with an A1200 I've been unable to get my Rocgen Plus genlock to work correctly, though it worked perfectly before. I've tried a separate power supply and disconnecting everything but the Rocgen from my Amiga, but with no success. My questions are:

1. Are RocTec bringing out a new version of the Rocgen Plus which is compatible with the A1200?

2. Will they take back the old version in exchange for the new one?

3. Are they bringing out a DIY upgrade kit?

I'm beginning to wish I'd kept my A500 Plus – at least everything worked. It now seems that like with many others I am £150 down the drain.

S Woodall
Hartlepool
County Cleveland

Don't be too harsh on RocTec – it's not their fault that Commodore changed the specs of the RGB port when they built the A1200, is it? And to their credit they did solve the problem with later releases of the RocGen Plus, though I'm afraid this doesn't help you much.

I very much doubt that RocTec would take part exchange deals on used equipment and I wouldn't expect there to be an upgrade kit (even if an upgrade were possible). But you could try asking your dealer what the situation is – you *might* get lucky (but don't hold out much hope of it).

I know you feel bad about this – just like the people who bought A1000s only to find that they can't have Workbench 2, pre-AGA Amiga owners who can't upgrade their chipsets to let them use the new display modes, and those who bought A530s and A590s for their A500s only to find they can't use them with an A1200. But unfortunately things move on. Products evolve and old technology becomes redundant, for one reason or another.

I wish this weren't always the case, but there seems little that the average punter can do about this. It looks like you just can't win. ***GW***

PALETTE LOCKING NEEDED

VIDEO

Using *V-Lab* there is an option ("Record Sequence") to record frames from my video and save them to memory. There is also an ARexx script to change these frames from YUV data into Amiga IFF files – resulting in a number of pictures, each with its own colour palette, but not in ANIM format!

I tried some PD programs (such as *Animation Station)* but this doesn't support AGA (I have an Amiga 1200). There's a utility in *Real 3D 2* that can do the conversion, but it doesn't solve the colour difference. I'd consider ADPro's *FRED*, but you said in *AS* 28 that it is very difficult to use. What should I do?

Luc Depraeter
Wevelgem
Belgium

Reading between the lines, I presume that you are referring to the colour changes that occur between each frame when you play the converted YUV frames back as an animation in *Deluxe Paint IV AGA?*

There's a simple answer to the problem – you need to "Lock" the palette for each frame, forcing each frame of the sequence to use the same colour palette. Unfortunately there's no way to do this from within *V-Lab* (as far as I can see), so you'll have to first convert your YUV frames (as you have been doing) and then adjust them so that they all use the same colour palette.

You could convert all the YUV frames directly into an IFF ANIM with

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changed this section of the code to look a little like this:

```
UnCodeBlock link      a2,#-$20
; Make Space On Stack
      lea   -$20(a2),a3      ; Ad☛
dress Of Bltnode Structure
;
; — Clear next blit parameter☛▼
(required) and set up blitter
;     and cleanup function ....
      clr.l bn_n(a3)
      move.l   #UnCodeData,☛
bn_function(a3)
      move.l   #CleanUp,☛
bn_cleanup(a3)
;
; — Calculate blitsize ....
      lsl.w #$3,d0      ;Length ☛
*6 = N0: Rows
      ori.w #$02,d0     ;2 Words ☛
Per Line
      move.w   d0,bn_blitsize(a3)
;
; — Ensure our cleanup ☛
function is called ....
      move.b   #$40,bn_stat(a3)
      clr.w bn_beamsync(a3)
;
; — Length, Source and ☛
Destination of blit ....
      move.l   d0,$12(a3)
      move.l   a0,$16(a3)
      move.l   a1,$1a(a3)     ; Le☛
ngth, Source, Dest.
;
; — Queue our blitter ☛
operation ....
      move.l   a3,a1
      move.l   Gfxbase,A6
      jsr   QBlit(A6) ; Queue ☛
Blitter Operation
;
; — Wait for it to complete, ☛
de-allocate stack space and ☛
return ....
      bsr   WaitSignal
      unlk  a2
      rts
```

Although it ended up a little longer than the previous version, at least this way I was able to see what was going on. I resisted changing it to use a fixed blitnode structure, as follows:

```
my_blit_node:
      dc.l  0  ; bn_n
      dc.l  UnCodeData ; bn_☛
function
      etc etc...
```

This was because I wanted to get the existing code working. Now that it was a little neater, I was able to try and hunt down some other problems.

A brief explanation of the **QBlit** function. Basically, you call this routine to say "I'd like the blitter in the near future please, but I'm not desperate." Then, when the blitter is free, your specified function (at **bn_function** in the structure) will be called. This then performs the blitter operation, and returns a zero when it is finished. At this point, the **QBlit** call will call your **bn_cleanup** routine if required. A sensible thing to do is to use this routine to signal your main task to say "Hey, great, everything is done now, you can carry on". This is sort of what Maurice was doing, but not using the **bn_cleanup** mechanism.

The action of neatening this lot up uncovered several potential bugs. One was that the **bn_n** pointer was not being initialised. The ROM Kernel Guide says that this should be set to zero by the application and then not touched. I cleared this. I also found that the **bn_cleanup** function pointer was also required. If it was to be called, however, the **bn_stat** flag should be set to **CLEANUP ($40)**. I specified an empty routine just containing an **RTS**, and put a pointer to this into the **bn_cleanup**. Running the program now at least didn't crash the computer immediately – instead it locked.

I then checked the actual blitter routine itself. Although the documentation is a bit skimpy on this, I discovered through trial and error that you must push every register you corrupt to the stack. I moved the call that sends the main task the "We're finished now" signal to the **bn_cleanup** routine (which is only called after everything is complete), and then experimented by pushing all registers to the stack and recalling them before exiting (with **d0** a zero). This worked, and the program no longer crashed.

Another fault I did find, which is easy to make and real hard to find in the program, is that the test data started on an odd boundary. This is how it happened:

```
Gfxname    Dc.b "graphics.☛
library",0

BlockData
      Dc.w $2AAA,$AAA9,$2AAA,$AA44
```

The string "**graphics.library**" with one zero is 17 bytes long, meaning that the first **$2aaa** of the test data is on an odd address boundary. This won't cause any problems in this case, because it is copied elsewhere before it is used – but it is a common mistake and a very easy one to make.

If you want to ensure that a **dc.w** is on an even boundary, put the first line of data on the same line as the label, and it will be on an even boundary – at least if you are using DevPac. If you are using another, less common, Amiga assembler, consult your manual to see if it will do this correctly.

JARGON BUSTING

MFM – A double-density disk storage method. Although a number of modern machines use MFM as a method of storing data, their formats are not necessarily compatible. MFM is a method of storing data, rather than a specific disk format.

QBlit – An OS-legal way of queuing blitter requests to be performed one after the other. The Operating System calls your specified routine when the blitter is idle. You share the blitter with other OS tasks.

a locked palette by using a program like ASDG's *ADPro*, either with the aid of an ARexx script, using SENTRY, or using *ProCONTROL,* which is a third-party front-end to *ADPro* that makes using *ADPro's* complex functions almost child's play. Alternatively, you could use GVP's *ImageFX* software instead, which can be made to do much the same thing via scripts.

You could also use a PD program such as *Rend24* (v1.05 or later) to lock all the palettes together after you've converted them to IFF files with *V-Lab*, possibly automatically if you told *Rend24* to wait for each image to be processed first before palette-locking them. *Rend24* could also be used to make the frames directly into a palette-locked animation. All of this should solve your problems. ***GW***

EMPTY BOXES



I own a Canon BJ-10 printer and I am using *PageSetter 3* to desktop publish with my Amiga 1200HD. I have just the 2Mb of standard graphics memory, no expansion memory. When trying to print Compugraphic typefaces, all I get is boxes where the letters should be. Also, *PageSetter 3* sometimes screws up when printing *ProDraw* clips. I am using the BJ10 driver as supplied with Workbench 3.
Paul Cotterill
Kingston Hill
Stafford

More memory, Paul, that's the solution. Sorry, I know it means spending a few hundred pounds, but 2Mb of graphics memory is simply not enough memory with which to desktop publish, despite the claims on the *PageSetter 3* box. With another 4Mb in the trapdoor I promise you that those boxes will go away and you'll get the text and *ProDraw* clips as you see them on the screen. But please, think hard before buying an A1200 memory expansion board that can take only 4Mb of RAM – it could be a false economy. Even 6Mb is not enough to desktop publish big documents that contain graphics and lots of different Compugraphic typefaces in many different sizes, and if you don't have the option to fit more RAM to your memory board you will have to buy yet another board and then try and sell the first one second-hand.

If you want to really improve the BJ-10's output from *PageSetter 3,* contact JAM about the *CanonStudio* software (they advertise in this magazine). *CanonStudio* makes a massive difference and makes the Workbench driver's output look pathetic. ***JW***

BLEEDING COLOURS!



I wish to use my Amiga 2000 and Sony CCD V200 video camera for animated titles but have only been able to do so via a MiniGen genlock. The results are poor, with extreme colour-bleeding and even total loss of colour on occasion. I have now given up the idea of overlaying titles on video footage and want merely to transfer the graphics directly to videotape. Until I can afford to upgrade the genlock I wish to know if there is any way I can output the Amiga's RGB signal directly into the camera, which has both video/audio inputs and outputs.

I have tried to connect the Amiga RGB cable to the camera via a female 6-pin DIN plug, pigtailing into video/audio phonos, but without success. Commodore have been of no help – it would seem easier to get an audience with the Pope!

The Amiga's only video output is black and white, which seems rather anachronistic for a supposedly "high-tech" machine – and few users will have a use for it anyway. Is there some special reason why this socket could not have been made a composite output?

Various high street computer and video dealers have expressed doubts that any domestic camera is capable of receiving a full RGB signal from a computer without a genlock. Is this correct, or is there some cable I can buy which would change the RGB signal to a composite one acceptable to the camera's video input?

Finally, is GVP's G-Lock any improvement over the MiniGen as far as the problem of colour bleeding is concerned?
John Morgan
Thornton Heath
Surrey

You sound like a confused chap indeed! First, I take it that the MiniGen you are using is quite old – the recent ones I've seen produce excellent results (bearing in mind that they cost less than £50, of course). The older ones had far more problems, including the occasional colour bleeding you mention. But you still shouldn't expect top-quality results, because it isn't designed to be a top-quality genlock. Even its makers, Lola Electronics, would agree with me on this. If you want top quality you'll have to pay top dollar.

Are you using good-quality video cables to make the transfers? Is the quality of the video signal you are feeding to the genlock reasonable? Do you use good-quality videotape? These are all factors which could affect the output quality of any genlock, not just the MiniGen. Try looking at these factors and see if the situation improves.

Regarding recording RGB to a video camera – everything you've been told is correct. You cannot input RGB to your camera, however hard you try. In fact, I think you're lucky that you've not accidentally damaged your camera by indiscriminately plugging external signals into it. The only way you can input video to your camera is through the proper video input – in which case you'll still need to convert the Amiga's RGB output using a genlock.

As for the Amiga 2000's video output being anachronistic, I'd agree, but I suspect the reason that it is only monochrome (it *is* composite, by the way) is that the colour composite output provided by its predecessor, the Amiga 1000, was of rather poor quality and Commodore didn't want to spend money improving it. After all, people could always buy a Commodore 2300 genlock card, so rather than drop it altogether they removed the chroma side, resulting in the monochrome output of which you are so derisory. On the other hand, the A4000 has no video outputs at all – and that's supposed to be high-tech as well – but the A1200 has both RF and composite video outputs (and excellent they are too). Only Commodore know the answers to these conundrums. Also, don't forget that the A2000 has been out of production for several years now, so while it *was* high-tech when it first appeared it has been rather overtaken nowadays.

Finally, the G-Lock is okay, though it suffers from a few design quirks which mean having to boot up twice and only being able to perform graphics/video fades through software. If you only need composite video and if cost is a prime concern, then I'd recommend taking a look at Lola's new MiniGen Pro (reviewed on page 80 of this issue). In either case, the colour bleeding is minimised and the quality is pretty good – but do remember that quality doesn't come cheap. ***GW***

NOT AN AMIGADOS DISK



I have been writing an educational program using AMOS Pro. I was in the middle of copying some samples over to my program disk when up pops a message that the program disk is no longer an AmigaDOS disk! I have tried to load my programs into the AMOS interpreter but it just informs me that it is not an AmigaDOS disk. I loaded up a disk repair program *(DiskSalv)* and it showed me that all my data is still on my program disk, but it failed to repair it. Can you please tell me how I can get my data on to a new disk?
Michael Pearson
Bispham
Blackpool

First, I would recommend that you try to make a copy of your faulty disk, as is, and then put it away. This is because if the disk surface is at fault, there is no way that a disk repair program will be able to fix such a defect. Use a copier with Nibble copy, such as *X-Copy*.

Next, get hold of a copy of the PD program, *Fixdisk*. This program allows greater control over the repair of disks, and should be available from any good PD library (see the directory on page 120 this month).

Fixdisk will read each cylinder of the disk, scanning for errors. Once this phase is complete, the program will list all of the files on the disk. At this point, you may wish to copy the files over on to another pre-formatted disk. To do this, just select the relevant files and click on **Copy**. A requester will appear. Click on the **Header** button and type in the path and filename of where you would like to copy the file to. This procedure should enable you to copy all your data over without further problems, but do try to use only good-quality, branded disks to be on the safe side. ***WR*** AS

JARGON BUSTING

AmigaDOS – The most basic part of the Amiga's operating system – the collection of programs that take care of the general running of the machine. AmigaDOS concerns itself with device-handling: control of the keyboard, basic screen output, disk drives, printers etc.

Compugraphic fonts – Rather than a simple bit-mapped image of each character, which grows more jagged with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied in printing, no information is lost and the result always looks smooth.

RGB – Video signal made up of three parts: red, green and blue.

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Due to the exchange rate, or manufacturer's changes or due to current RAM shortage, some prices may alter, either up or down, during the several weeks between going to press and the end of the month of issue. We would ask that, prices be confirmed by telephone before ordering.

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Hunt for Red Octob
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Graeme Souness Soc
Neighbours
Frankenstein ‡ @
Captain Planet
Silkworm Helicopter 9
Edd the Duck ‡
Stack Up ‡
Lemmings 92% A
Round the Bend
Continental Circus - 8 rac
92% AA@
World Cricket
Bart Simpson
Spiderman/Cptn Ameri
Ice Hockey
Xenon - C+VG Game of th
Blade Warrior - A Power, A superb reviews
Toobin Rapid ridin
AWARD WINNE
Space Ace, Kick Off, PipeMan (counts as 2)

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Readers' Listings

Two Amiga Shopper readers win £25 for their AMOS programming efforts this month...

Our first listing this month is an image manipulation package written by Ian Dearing from Calcot in Reading. His code for handling image distortion is both cleverly written and concise. On the other hand the user interface is rather basic – or in Ian's own words "it stinks". Obviously though you can re-write this section to add your own all singing and dancing routine. The second listing is a short routine to enlarge a sprites and centre it on the screen.

Now that we have a cover disk with each month's *Amiga Shopper* you don't even have to risk contracting "keyboard cramp" – you'll find the source code sitting on the disk in a directory sensibly named "Source_Code". Also in this directory you'll find a file called "Distort_Info.txt", which contains some brief suggestions from Ian as to how you may wish to further develop his image package.



We're always interested to receive listings from readers – and remember, any that we print earn the sender the grand sum of £25. Please send us a hardcopy of the program along with a disk containing copies of all the files on it (source code, object code if any, plus all the appropriate documentation). Don't forget: it is theft to use anyone else's code without permission, so don't. And please include a signed statement that your code is all your own work. You know how we worry.

The address: **Listings, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW.**

The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

```
************************************************
'
' *** Image Distortion Program              ***
' *** By Ian Dearing                         ***
' *** Finished on 20/09/93                   ***
'
************************************************

' ** User Enterable Information **
SCR_WIDTH=320
SCR_HEIGHT=200
NUM_COLS=16
RES=Lowres
FILE$=""' ** put the name of the IFF ▼☛
    file that you wish to manipulate here **'
NUM_DIV_X=16
NUM_DIV_Y=10

' ** Set up screen with picture
' ** to distort on **
Screen Open ▼☛
        0,SCR_WIDTH,SCR_HEIGHT+1,NUM_COLS,RES
Curs Off : Flash Off : Cls 0 : Palette 0,$FFF
Load Iff FILE$

' ** Set up screen to distort onto **
Screen Open 1,SCR_WIDTH,SCR_HEIGHT,☛
                                  NUM_COLS,RES
Curs Off : Flash Off : Cls 0
Screen Copy 0 To 1 : Get Palette 0

' *** Screen for 'user interface' ***
Screen Open 2,SCR_WIDTH,SCR_HEIGHT,☛
                                  NUM_COLS,RES
Curs Off : Flash Off : Cls 0 : Get Palette 0

' ** Set up VARIABLES **
DIV_LEN_X=SCR_WIDTH/NUM_DIV_X :
DIV_LEN_Y=SCR_HEIGHT/NUM_DIV_Y
Dim GRID_X(NUM_DIV_X,NUM_DIV_Y),GRID_Y☛
                   (NUM_DIV_X,NUM_DIV_Y)
Dim SP_X(DIV_LEN_X,DIV_LEN_Y),☛
                SP_Y(DIV_LEN_X,DIV_LEN_Y)

Global DIV_LEN_X,DIV_LEN_Y,☛
                      NUM_DIV_X,NUM_DIV_Y
Global GRID_X(),GRID_Y(),SP_X(),SP_Y()

' * Set initial values in grid *
For Y=0 To NUM_DIV_Y
  For X=0 To NUM_DIV_X
    GRID_X(X,Y)=X*DIV_LEN_X
    GRID_Y(X,Y)=Y*DIV_LEN_Y
  Next X
Next Y

' ** Change the grid layout **
Repeat
  Screen Copy 0 To 2
  DISPLAY_GRID
  Repeat : M=Mouse Key : Until M<>2
  If M<>2
    X=X-Screen(X Mouse) : Y=Y ▼☛
                          Screen(Y Mouse)
    X_GRID=(X+DIV_LEN_X/2)/DIV_LEN_X : ▼☛
          Y_GRID=(Y+DIV_LEN_Y/2)/DIV_LEN_Y
    Repeat : Until Mouse Key=0
    Repeat : Until Mouse Key=1
    GRID_X(X_GRID,Y_GRID)=X Screen(X Mouse)
    GRID_Y(X_GRID,Y_GRID)=Y Screen(Y Mouse)
  End If
Until M=2

Screen Close 2
For Y=0 To NUM_DIV_Y-1
  For X=0 To NUM_DIV_X-1
    X1=GRID_X(X,Y) : Y1=GRID_Y(X,Y) ▼☛
       : X2=GRID_X(X+1,Y) : Y2=GRID_Y(X+1,Y)
    X3=GRID_X(X,Y+1) : Y3=GRID_Y(X,Y+1) ▼☛
    : X4=GRID_X(X+1,Y+1) : Y4=GRID_Y(X+1,Y+1)
    If X1<>X*DIV_LEN_X or ▼☛
  Y1<>Y*DIV_LEN_Y or X2<>(X+1)*DIV_LEN_X ▼☛
               or Y2<>Y*DIV_LEN_Y or ▼☛
  X3<>X*DIV_LEN_X or Y3<>(Y+1)*DIV_LEN_Y ▼☛
 or X4<>(X+1)*DIV_LEN_X or Y4<>(Y+1)*DIV_LEN_Y
      DISTORT_AREA[X,Y,GRID_X☛
          (X,Y),GRID_Y(X,Y),GRID_X(X+1,Y),☛
        GRID_Y(X+1,Y),GRID_X(X,Y+1),GRID_Y☛
   (X,Y+1),GRID_X(X+1,Y+1),GRID_Y(X+1,Y+1)]
    End If
  Next X
Next Y


Procedure DISPLAY_GRID
  Ink 7
  For X=0 To NUM_DIV_X
    Draw X*DIV_LEN_X,0 To ▼☛
            X*DIV_LEN_X,NUM_DIV_Y*DIV_LEN_Y
  Next X
  For Y=0 To NUM_DIV_Y
    Draw 0,Y*DIV_LEN_Y To ▼☛
            NUM_DIV_X*DIV_LEN_X,Y*DIV_LEN_Y
  Next Y

  Ink 15
  For Y=0 To NUM_DIV_Y
    Plot GRID_X(0,Y),GRID_Y(0,Y)
    For X=1 To NUM_DIV_X
      Draw To GRID_X(X,Y),GRID_Y(X,Y)
    Next X
  Next Y

  For X=0 To NUM_DIV_X
    Plot GRID_X(X,0),GRID_Y(X,0)
    For Y=1 To NUM_DIV_Y
      Draw To GRID_X(X,Y),GRID_Y(X,Y)
    Next Y
  Next X
End Proc

Procedure DISTORT_AREA[GRID_X,☛
      GRID_Y,X1#,Y1#,X2#,Y2#,X3#,Y3#,X4#,Y4#]
  ' ** Create point X and Y's
  ' ** Work out all the individual values **
  YDIV#=DIV_LEN_Y*1.0
  DIFF1_X#=(X3#-X1#)/YDIV# : ▼☛
                      DIFF1_Y#=(Y3#-Y1#)/YDIV#
  DIFF2_X#=(X4#-X2#)/YDIV# : ▼☛
                      DIFF2_Y#=(Y4#-Y2#)/YDIV#

  For YP=0 To DIV_LEN_Y
    DIFF_X#=(X2#-X1#)/(DIV_LEN_X*1.0)
    DIFF_Y#=(Y2#-Y1#)/(DIV_LEN_X*1.0)

    X#=X1# : Y#=Y1#
    For XP=0 To DIV_LEN_X
      X#=X#+DIFF_X#
      Y#=Y#+DIFF_Y#
      SP_X(XP,YP)=Int(X#)
      SP_Y(XP,YP)=Int(Y#)
    Next XP
    X1#=X1#+DIFF1_X# : Y1#=Y1#+DIFF1_Y#
    X2#=X2#+DIFF2_X# : Y2#=Y2#+DIFF2_Y#
  Next YP

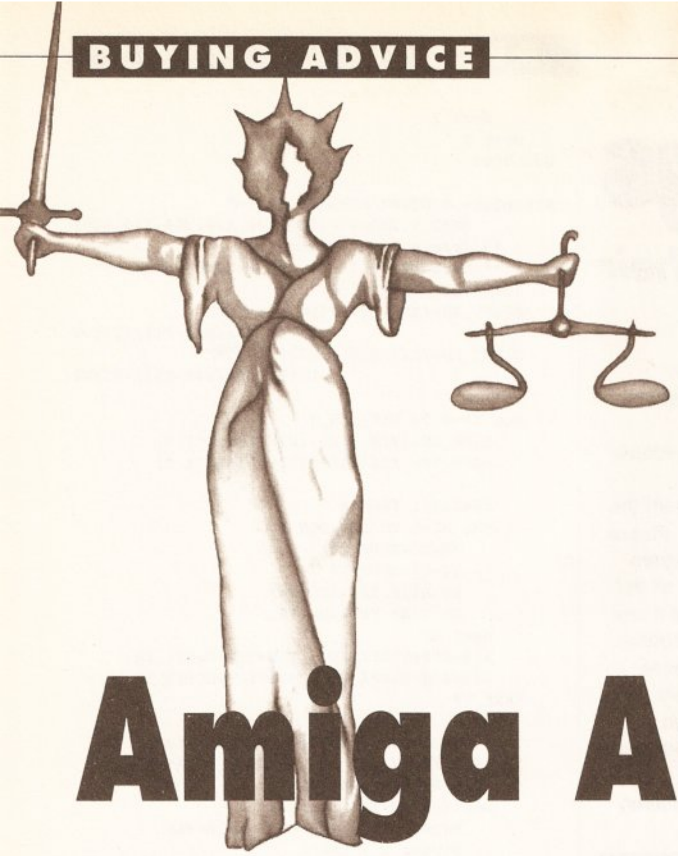
  ' ** Displays distorted quaderalateral **
  XA=GRID_X*DIV_LEN_X : YA=GRID_Y*DIV_LEN_Y
  For Y=0 To DIV_LEN_Y-1
    For X=0 To DIV_LEN_X-1
      Screen 0 : I=Point(X+XA,Y+YA)
      Screen 1 : Ink I
      Polygon SP_X(X,Y),SP_Y(X,Y) ▼☛
          To SP_X(X+1,Y),SP_Y(X+1,Y) ▼☛
        To SP_X(X+1,Y+1),SP_Y(X+1,Y+1) ▼☛
              To SP_X(X,Y+1),SP_Y(X,Y+1)
    Next X
  Next Y
End Proc
```



And finally, here's a little AMOS routine from Tim Blacklock of Sheffield, whom we last met back in *Amiga Shopper* 29. This routine enlarges a sprite to the size of the current screen and then centres it in the middle of the screen. You should substitute the name of the sprite bank you want to use in the **Load** instruction at the second line.

```
'
' Bob Picture
' By Tim Blacklock
'
If Exist("Amos:Zoom.abk")=True Then ▼☛
                     Load "Amos:Zoom.abk"
Load "A_Sprite_Bank.abk"
Screen Open 0,320,256,32,Lowres
Curs Off : Flash Off : Cls 0
Screen Hide : Hide On
Get Sprite Palette
_ZOOM_SPRITE[1,7,15]
Screen Show
Wait Key
Procedure _ZOOM_SPRITE[_BOB_NUM,SCR,BORD]
  SC=Screen : SCC=Screen Colour : ▼☛
        SW=Screen Width : SH=Screen Height
  A=Sprite Base(_BOB_NUM)
  SPW=Deek(A)*16
  SPH=Deek(A+2)
  Screen Open SCR,16+((SPW/16)*16) ☛
            ,16+((SPH/16)*16),SCC,Lowres
  Curs Off : Flash Off : Cls 0
  Screen To Back SCR : Paste Bob 0,0,_BOB_NUM
  Zoom SCR,0,0,SPW,SPH To SC,0,0,SW,SH
  Screen Close SCR
  Screen SC
  X=(SW/2)-(SPW/2)
  Y=(SH/2)-(SPH/2)
  Ink 0
  Bar X,Y To X+SPW,Y+SPH
  Paste Bob X,Y,_BOB_NUM
  Ink BORD
  Box X,Y To X+SPW,Y+SPH
End Proc
```

For full details of all the other goodies on this issue's cover disk, turn to page 12. AS



Buying hardware or software isn't the only time you need to know your rights as an Amiga shopper. Alex Soboslay explains where you stand when you need to get your Amiga kit repaired, then looks at the copyright question.

Amiga Advocate

In past instalments of Amiga Advocate, we have looked at the legal position when you buy something either in a shop or by mail order, what you are entitled to expect and what your rights are if the goods are faulty in some way, and how to get things put right if there is a problem, including how to enforce your rights through the County Court's "small claims procedure". But buying goods is not the only time you might come up against legal problems. What if you have owned your Amiga for some time and it needs repairing?

If your Amiga is less than a year old, you should have no problem – it will still be under the manufacturer's warranty and should be fixed free of charge by an authorised repairer. The only exception to this will be if the fault was caused by misuse, some form of unauthorised tampering or accidental damage, not a manufacturing defect or "fair wear and tear". In this case, the same legal principles will apply as if the machine was out of warranty.

Let's be clear right from the start that problems with repairers are very rare. There is generally not a lot of profit to be made from computer repairs, so there are not many cowboys in the field, just skilled professionals with a genuine commitment to customer service – they wouldn't stay in business very long if they were anything less. However, we have received complaints even about large repair companies, so it's always possible for things to go wrong, and always best to know your rights.

There are three possible areas where disputes might arise: the cost of the repair, whether the repair is done satisfactorily in the first place, and what happens if things go wrong afterwards. Let's look at the question of cost first.

In general, a repairer is entitled to ask any reasonable price he likes – it really pays to shop around here, even more than when you're looking to buy, but remember that an unrealistically cheap repair may be a bad bargain if you then have to get your equipment repaired all over again, or worse, if a bodge job causes even more damage.

When you're shopping around, ask for a *quotation* in writing – if you accept it, there is a binding contract and that is the price you will pay. An *estimate* is only an approximation – the final cost may turn out to be higher, though you should still ask for it in writing as well. Of course, the terms "estimate" and "quotation" are often used loosely, so it is wise to make absolutely sure in plain language whether the price you are quoted is a *firm, fixed* price or not. Sometimes repairers will specify that a quotation or estimate is valid for 14 days or a month, giving you time to think it over and get other quotes, but it is always a good idea to have both the offer and the acceptance in writing, setting out exactly what work is to be done and what the agreed price is.

Sometimes an estimate will have the letters "E&OE" on it somewhere in fine print. This stands for "Errors and Omissions Excepted", and simply means that the price may be different if something has been overlooked or a mistake has clearly been made. If for instance a repairer has accidentally written "£30" and you accept the price because everyone else has quoted £300, you are not going to get away with it just because it is written down (and you don't deserve to either, just for trying to pull a fast one!). This applies even if the estimate gives a "firm" price. However, putting "E&OE" on an estimate does not entitle the repairer to ignore the quoted price entirely – if the work done is substantially what was quoted for and there is no *obvious* error of this sort, the price should not vary much.

THE PRICE OF CHIPS

The general principle is to agree as much as possible in detail (and ideally in writing) before the repair is begun. It is reasonable to ask for a firm price and a firm time for the work to be completed, but a repairer is fully entitled to reserve the right to charge more than estimated if there is a rise in the cost of labour or materials – to cover himself, for instance, against unpredictable events such as the recent worldwide rise in the cost of memory chips, caused by a fire in the factory in Japan that manufactured most of the world's supply of the resin which integrated circuits are embedded in. You can however always ask for the estimate to *become* a firm price once you accept it – the repair will presumably be carried out soon afterwards, and the repairer should have a good idea of current costs. If he won't agree to this, try at least to get a *maximum* price in writing. You are also entitled to object to any conditions the repairer tries to impose limiting his responsibility for any damage he causes to your property or for defective work – these would be regarded as "unfair" contract terms and cannot be enforced.

Sometimes the repairer may say it is not possible to tell exactly how

WHO HAS THE RIGHT TO COPY?

A friend and I are starting up a disk-based magazine, and we were wondering if we could legally include screenshots of games we reviewed (grabbed with an Action Replay or similar). Other magazines do it...
Simon Lewis, Devon

What you suggest is perfectly legal, Simon. The Copyright Designs and Patents Act specifically says you may reproduce copyright material as part of a bona fide review – but beware of using screenshots out of the review context, just as decorations or pretty pictures on their own. That would be more questionable.

PIRATES AHOY

A local market stall has a box of Amiga software for sale, but they have no boxes or manuals and the disks have hand-written labels. Is this legal?

No. These are obviously illegal "pirated" copies. Strictly speaking, you don't even have the right to copy a program you've bought yourself unless the manual or the licence agreement that came with it specifically says that you can copy it to make a back-up. You can never legally make copies for friends. The exception is programs that are clearly marked "public domain" or PD, which means that the author has given permission for anyone to copy and distribute the program – but always check the document file on the disk to make sure you are allowed to copy it and always leave the document file intact on any copies you make.

Pirates should be reported to the Federation Against Software Theft (FAST) ☎ 0628 660377.

much work is required until he opens up the computer and takes a look. This is entirely reasonable. But bear in mind that a repairer is entitled to charge you for the work involved in assessing what is needed and preparing a quotation even if you don't have the repair done by him – so check first!

VARYING THE COST

As we've seen, there are some circumstances in which even a "firm" price might vary – if there has been a clear error, for instance, or if the repairer had reserved the right to cover increases in costs. You can also expect the bill to be higher if you ask for something more to be done once the repair work has been begun, or if you want some of the agreed work changed – but in these cases you should ask for a new "firm" price before giving the okay for the work to continue.

If any extra work is done without your prior agreement, you are *not* obliged to pay for it. A reputable repairer should contact you if he discovers something else that needs attention, not just go ahead and then add it to the bill afterwards. And speaking of adding things: the repairer cannot just slap an extra 17.5% on top of the quoted price for VAT. If there was no mention of VAT, the law is that VAT is assumed to be included in the price. VAT can be added only if the price quoted *explicitly excluded* VAT.

And finally, don't panic: even if no price was agreed at all up front, the law says that the price charged must be "reasonable", so you have some legal fall-back even if you haven't protected yourself in advance.

POSSESSION IS NINE-TENTHS OF THE LAW

Unfortunately, we now come to the most onerous aspect of getting repairs done. The law gives repairers what is called a "lien" (pronounced "lean", more or less) over goods left for repair – that is, the right to retain possession of the goods until paid. This means that even when you disagree with a repairer's charge, *you must pay it to get your property back.* This applies even if the bill is substantially more than an estimate or quotation.

If you find yourself in this position, make sure that the repairer knows you disagree with the price charged. Let him know that you are paying "under protest". As soon as possible afterwards, put it in writing: write confirming that you paid under protest to get your property back and asking the repairer to refund the overcharge. Set out the grounds for your protest: the price was substantially higher than the estimate, or included work you had not agreed to in advance, or was simply not "reasonable" – but if you claim this, you must be prepared to prove what would have been reasonable, by producing firm quotations from other repairers for the same work, for example. State what you think the price should have been, and give the repairer a reasonable time to respond (say about 10 to 14 days). If he does not do so, or digs in his heels, you have exactly the same legal options open to you as if you had a dispute over goods: talk to a solicitor, your local Citizen's Advice Bureau, local Trading Standards Office, or County Court.

ALL WORK GUARANTEED

What about problems with the quality of the repairs? The law says that you are entitled to have the repairer use professional care and skill and use only materials fit for the purpose. We've all heard stories about repairs that were not done properly, or not done at all but still charged for – cases where somebody later opened up his Amiga and found that a component had not been replaced as claimed at all, and so on. In such cases, the law is the same as for defective goods: you should complain as soon as you discover the defect and seek to have it put right. If you continue to use the goods, you may be presumed to have accepted the quality of the repair.

Obviously you will have difficulty if the defective nature of the repair does not show up for some time – you clearly shouldn't open up your Amiga and have a poke around just to check up on the repairer, even if you know your way around its insides pretty well, because this will make it impossible to prove that the defect was attributable to the repair and not to you yourself. However, you should certainly check that the fault you originally wanted repaired has been fixed. If possible, ask the repairer to show you the machine working in the shop and try it out before you accept it back. If it's not okay, politely insist that the repair be done to your satisfaction. No repairer is likely to argue if he can see that the machine is still not working properly.

If the same problem comes back some time later, you should politely ask the repairer to put it right again. Most repairers will guarantee their work for some specified time – usually 30 days, but sometimes longer – so you won't have to pay anything if the fault recurs within this period, and many repairers will take another look for nothing even beyond their guarantee time if the fault is identical, though they are not legally obliged to. The law will step in only if the fault recurs because the original repair work was not done professionally or was done with unfit materials – but this will be up to you to prove, and that means finding an independent expert such as another repairer who is willing to say so, preferably in writing.

If the repairer has deliberately misled you about what he'll do and the materials he'll use, he can be prosecuted under the Trade Descriptons Act. If you think this is the case, contact your local Trading Standards Office (listed under your local council in the telephone book).

DISASTER RELIEF

What if the repair has been a real bodge job and gone seriously wrong later? In one case, a badly-repaired Power Supply Unit blew up, causing damage not only to the Amiga it was connected to but also flash burns to other property near it. The law is clear-cut: a repair where the repairer has not used professional care and skill, or where he used materials not fit for the purpose, is a breach of contract, and you are entitled to sue for:

1. the cost of having the original defects put right by someone else,
2. the cost of remedying any new defects for which the repairer is responsible (in this case, the cost of replacing chips damaged by the explosion of the PSU),
3. the cost of damage to property caused by the defects (in this case, the damage caused by flash burns – but this "consequential" loss may be limited only to *direct* consequences of the defect, though in some cases the courts have awarded compensation for more remote losses such as loss of earnings),
4. compensation for the loss in value of the goods caused by the defects, and
5. compensation for any injury caused by the defects.

It will make no difference if the repairer has inserted a condition into the contract seeking to limit his liability – "Liability is limited to the first £50 of damage howsoever caused", or something of that sort. The Unfair Contract Terms Act specifically says that such conditions have no effect in law.

You can also sue a repairer for damage to your property while it was in his possession or for loss of it, but only if he has been negligent. If your Amiga is stolen from his shop, for example, despite normal and "reasonable" security precautions (there's that word again!), you will *not* be entitled to sue him, because he has not been negligent. (The exception is if the thief was one of his employees.) For this reason, it is important to arrange your own temporary insurance when you leave something for repair – or check your Home and Contents insurance: many policies include coverage for goods left for repair.

A repairer is not entitled to sell your property, nor are receivers if the repairer has gone bust, except if you owe money for the repair, have not returned to collect the goods, and have not responded to reasonable attempts to contact you.

TIME, PLEASE

Finally, what if the repairer just seems to be taking forever to carry out the repair? If you have agreed a time in advance, this may be an enforceable term of the contract, though there may be some argument about whether it is an *essential* condition – if it is not, you may not be entitled to cancel the contract because he is taking too long. The Supply of Goods and Services Act 1982 says that if no time is specified, repairs must be carried out in a "reasonable" time. If they are not, and you can't get your computer returned to you, a court may be willing to grant you an "order for specific performance" – a court order telling the repairer to finish the job within a given time, which makes time an essential condition – or else order the return of your equipment. But if time is really important to you, the best advice is to make sure you say so up front. Here again, it is always good practice to know exactly what you are agreeing to. AS

HAVING PROBLEMS?

If you are involved in a dispute of any kind, always try to resolve the problem with the dealer or supplier first in an amicable way. If that doesn't work, seek advice from a solicitor or from one of the following (check your local phone book for the number or address):

- Citizen's Advice Bureau
- Trading Standards Office (listed under your local council)
- Office of Fair Trading
- County Court (ask about the "small claims procedure").

Amiga Advocate is intended only as a guide to the law in England and Wales, and you should not rely solely on anything said here. We cannot give direct advice on individual cases, act as arbitrators in any dispute, or reply personally to any correspondence.

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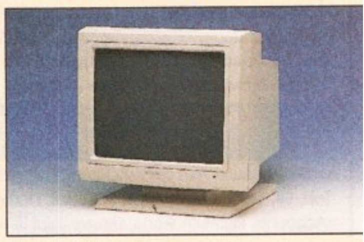
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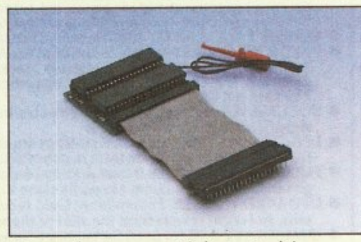
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Toby Simpson shows you how to add a graphical front end to our on-going address book program.

This month we'll be combining some of our file access code into some more advanced gadget handling code to prepare ourselves for a working program.

This month we're going to make the first real version of the Address Book application, a sort of "alpha test" version, by combining the file access code we worked on back in the summer, with the more recent window code.

It's time for some design work again. The last time we looked closely at design was in *Amiga Shopper* 26, where we decided that a good thing to do would be to open a window on the screen, with a whole load of neatly-stacked string gadgets for entry of data and some buttons at the bottom for moving around the file, perhaps VCR-style with little images on them. Well, let's not get too carried away initially. A good starting place would be to open that window with the basic gadgets on. How many are we going to need, and of what type? Looking back to our file specification, we have nine fields in our file. We'll need to supply entry gadgets for all of these, neatly labelled down the left hand side so that the user knows what they are.

As well as those, we'll need some gadgets at the bottom. We'll want to be able to go backwards and forwards, and save any changes we might make, and a direct "**goto**" button would be handy so that we can skip to a particular record. **Search** would be a great additional feature also, so that we can quickly find any given record.

A very good thing to do if you're designing a user interface is to load up a program like *Deluxe Paint* and draw it. This way you can play with a whole load of different layouts very quickly. There are also some PD programs out there – *GadToolsBox* for example – which enable you to play with user interfaces. It's much easier to sort out layouts at this point in the program. before you've actually programmed several screens of numbers!

Having designed our user interface, we're now ready to start programming. You will recall that so far our C program consists of two main programs, the **address_book.c**, where our **main()** function is, and **address_functions.c**, where we have put all of our file access code. It's time for a new **.c** file. We're going to create one called **address_gui.c**, and we'll put all of our Graphic User Interface (GUI) things in here, such as opening and closing of windows. The modified **address_book.c** file to type in is below in Listing 1. The new module – **address_gui.c** – is in Listing 2 on the following page. You'll also have to modify the files **address_includes.h** and **functions.h** to the versions shown in Listings 3 and 4 respectively (both shown on page 72).

In order to get our new file working, we're going to have to add a new line to the file **dice_make**. Simply add this line to the end of it:

```
address_gui.c
```

Now, our Dice compilation script (shown fully in Listing 4 on page 72) will look for this file also. And that means we'll have to create the file itself.

We'll need two functions initially: one to open our window and one to close it. Here's the prototypes:

```
BOOL open_window(void);
```

LISTING 1: THE MAIN ADDRESS_BOOK CODE

```
/*********************************
 *
 * address_book.c
 *
 * MAIN CODE MODULE
 *
 * TO COMPILE USING DICE:
 *  "execute make_app" - Where make_app is
our application maker -
 *           see earlier issues of AS.
 *
 * Address book application for Amiga
Shopper.
 * By Toby Simpson.
 * (C) Copyright AmigaShopper 1993.
 */

#include "address_includes.h"

/* Definition for the intuition library base
*/
struct IntuitionBase *IntuitionBase = NULL;

extern struct Window *addr_window;
    /* External definition */

/* Embed a version string in our program */
UBYTE *version = "\0$VER:"VERSION_STRING;

/* Our "main" function */
void main(void)
{
 BOOL              quit_program = FALSE;
 long              signal_mask = 0;
 struct        IntuiMessage *imsg;
 struct        Gadget *gad_pressed;

  /* Open the intuition library */
  if (!(IntuitionBase = (struct Intuition☛
Base *) OpenLibrary("intuition.☛
library", 34L)))
    {
    printf("Can't open intuition.library ▼☛
V34.\n");
    cleanexit(10);
   /* Exit, error code 10 */
    }

   /* Open our window */
   if (!(open_window()))
    {
    printf("Can't open my window.\n");
    cleanexit(10);
   /* Exit, error code 10 */
    }

   /* Work our our signal mask */
   signal_mask = 1L << (addr_window->☛
UserPort->mp_SigBit);

   /* Window opened, now wait for events */
   while (!quit_program)
    {
    /* Wait for something to happen */
    Wait(signal_mask);

     /* Act on any messages */
     while (imsg = (struct Intui☛
Message *)GetMsg(addr_window->UserPort))
      {
      /* Remember the gadget number for
identifying presses */
      gad_pressed = (struct Gadget *)imsg-☛
>IAddress;

       switch(imsg->Class)
        {
        /* If it's the close gadget, set the
exit flag */
        case CLOSEWINDOW:
              quit_program = TRUE;
              break;

        case GADGETUP:
              printf("Gadget number was ▼☛
%ld\n", gad_pressed->GadgetID);
              break;
        }

      /* Now we've dealt with the message,
reply to it */
      ReplyMsg((struct Message *)imsg);
      }
    }

  /* Now exit gracefully with no error code */
  cleanexit(0);
}

/*******************
 *
 *  void cleanexit(error_code)
 *
 * This routine simply tidies up anything
which is open before exiting
 * the program.
 */

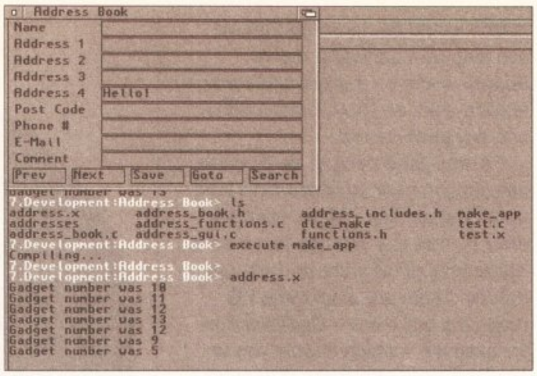
void cleanexit(int return_value)
{
 if (IntuitionBase) CloseLibrary((struct
Library *)IntuitionBase);
 close_window();
/* Close our window if it was opened */

 /* Exit the program */
 exit(return_value);
}
```

```
void close_window(void);
```

Our **open_window** function will return **TRUE** if it was able to open the window, **FALSE** otherwise. As well as opening the window, we'll get it to build and attach the gadgets to the window. The **close_window** function will simply close our window if it was open, and free any other resources.

Now that we are using Intuition functions in our main code, we'll also have to open the **intuition.library**, and include a couple of new files in our **address_includes.h** file. Our main code, **address_book.c**, will now be responsible for calling the **open_window** routine, waiting for events, calling functions according to events, and then exiting and closing the window when the user selects the close gadget. This means a re-write of the **address_book.c** code, and a new code module, as discussed above, to handle the windows. Fortunately, in our last instalment of this C programming series in *Amiga Shopper* 30, we had an example program which opened a window, waited for a close gadget and then exited. You can save yourself a lot of typing by cutting parts out of this and inserting them into your existing code.



Here's what the interface code produces – each gadgets's number is printed if the user clicks on it.

There is nothing particularly new in this code, except that we are using a loop in **open_window** to create our new gadgets, rather than type in nine individual gadget structures for the fields and a further five for our control buttons. Since each one only differs slightly from the first, we can use a loop to save ourselves some work – and another advantage of doing this is that if we needed to add further buttons at a later date, it would be very easy to do, because we'd simply have to change a number or two.

Note that to determine the headings for the field types and the gadget string lengths, we are using information we already have. Also, the code is pretty much font-independent and should adapt nicely to whatever Workbench font you use. The only catch is that in order to keep our window nice and compact, we'll have to shorten some of these names to prevent over-run in some

continued on page 72

LISTING 2: THE WINDOWS AND GADGETS CODE

```
/* address_gui.c
 *
 * Functions for the support of our graphics
user interface. Responsible
 * for opening and closing windows, and
dealing with gadgets.
 */

#include "address_includes.h"

#define CONTROL_BUTTONS 5

/* Note -
  Defining gadgets, stringinfos and buffers
out of a function means
  that they are all set to zeros at the
start, rather than being
  allocated on demand onto the stack, and
containing random data. We
  can assume, therefore, that un-initialised
fields contain zero. */

/* Gadget Structures */
struct Gadget
window_gads[TOTAL_FIELDS+CONTROL_BUTTONS];

/* String info structures for each string
gadget */
struct StringInfo string_info[TOTAL_FIELDS];

/* Character entry buffers for string gadgets
*/
char char_buffers[TOTAL_FIELDS][128];

/* Text strings for button labels */
struct IntuiText
gad_text[TOTAL_FIELDS+CONTROL_BUTTONS];

char *control_names[] =
 {
 "Prev", "Next", "Save", "Goto", "Search"
 };

/* This is our newwindow structure */
struct NewWindow window_definition =
 {
 0,0,                 /* Top left position of
window. In this case, 0,0 */
 320,200,             /* Width and height of
window. */
 0,1,                 /* Block and detail
pens. (Ignored if you have 2.04 or above) */
 CLOSEWINDOW |
  GADGETUP,           /* IDCMP flags. We want
to know if user selects gadget

 or clicks on close gadget */
 SMART_REFRESH |
  ACTIVATE |
  WINDOWCLOSE |
  WINDOWDRAG |
  WINDOWDEPTH,              /* Flags. This
lot says our window will activate itself on
                          opening, have a close
gadget and a sizing gadget, be draggable
                          and have the
standard depth gadgets */
 &window_gads[0],          /* Pointer to
first gadget. */
 NULL,              /* Ignore this one */
 (UBYTE *)"Address Book",   /* Window title:
Self explanatory I hope! */
 NULL, NULL,
 64,64,                              /*
Windows minimum size */
 640,200,                  /* And maximum */
 WBENCHSCREEN /* Open on the workbench screen
*/
 };

/* Border vectors: elements 5 & 7 are heights
*/
UWORD str_border_data[] =
 {
 0, 0, 200+3, 0, 200+3, 0, 0, 0, 0, 0
 };

UWORD btn_border_data[] =
 {
 0, 0, 50+3, 0, 50+3, 0, 0, 0, 0, 0
 };

/* The border definition for our string &
button gadgets */
struct Border str_border =
 {
 -2, -2, 1, 0, JAM1, 5, str_border_data, NULL
 };

struct Border btn_border =
 {
 -2, -2, 1, 0, JAM1, 5, btn_border_data, NULL
 };

/* These are various pointers to structures,
including our window and
 any messages we might receive */

struct Screen wb_screen;
struct Window *addr_window = NULL;

/* Definitions we'll need from
address_functions.c */
extern int field_lengths[];
extern char *field_names[];

/******************************
 *
 * BOOL open_window(void);
 *
 * Attempts to open our window with our
gadgets on it. Returns FALSE for
 * a failure, or TRUE if the window was
opened successfully.
 */

BOOL open_window(void)
{
 int loop;
 int bar_height;
 int font_height;
 intgadget_spacing = 0;
 int window_height = 0;

 /* Fetch some information about the
workbench screen: 2.04 has a better way than
this */
 if (!(GetScreenData(&wb_screen, size
of (struct Screen), WBENCHSCREEN, NULL)));

 bar_height = wb_screen.BarHeight;
 /* Height of window title */
 font_height = wb_screen.Font->ta_YSize;
 gadget_spacing = font_height+6;

 str_border_data[5] = font_height + 4;
 str_border_data[7] = font_height + 4;
 btn_border_data[5] = font_height + 4;
 btn_border_data[7] = font_height + 4;

 /* Create our gadgets, string gadgets first
*/
 for (loop = 0; loop < TOTAL_FIELDS; loop ++)
  {
  window_gads[loop].NextGadget
= &window_gads[loop+1];

  /* Gadget hit-box */
  window_gads[loop].LeftEdge
= 100;
  window_gads[loop].TopEdge
= bar_height + 4 + (loop * gadget_spacing);
  window_gads[loop].Width
= 200;
  window_gads[loop].Height
= font_height;

  /* Gadget flags and rendering information
*/
  window_gads[loop].Activation
= GACT_RELVERIFY;
  window_gads[loop].GadgetType
= GTYP_STRGADGET;
  window_gads[loop].GadgetRender
= &str_border;
  window_gads[loop].SelectRender = NULL;

  init_gadget_text(&gad_text[loop],
field_names[loop], TRUE);
  window_gads[loop].GadgetText
= &gad_text[loop];
  window_gads[loop].SpecialInfo
= &string_info[loop];
  window_gads[loop].GadgetID
```

continued on page 72

LISTING 2: THE WINDOWS AND GADGETS CODE CONTINUED

continued from page 70

```
= loop;

   /* Set up this gadgets special info
structure */
   string_info[loop].Buffer
= &char_buffers[loop][0];
   string_info[loop].MaxChars
= field_lengths[loop];
   }

  for (loop = TOTAL_FIELDS; loop <
TOTAL_FIELDS+CONTROL_BUTTONS; loop++)
   {
   window_gads[loop].NextGadget
= &window_gads[loop+1];

   /* Gadget positioning */
   window_gads[loop].LeftEdge
= 10 + ((loop - TOTAL_FIELDS) * 60);
   window_gads[loop].TopEdge
=bar_height + 4 + (TOTAL_FIELDS *
gadget_spacing);
   window_gads[loop].Width
= 50;
   window_gads[loop].Height
 = font_height;

   /* Gadget flags and rendering information
*/
   window_gads[loop].Flags
   = GFLG_GADGHCOMP;
   window_gads[loop].Activation
= GACT_RELVERIFY;
   window_gads[loop].GadgetType
= GTYP_BOOLGADGET;
   window_gads[loop].GadgetRender     =
&btn_border;
   window_gads[loop].SelectRender     = NULL;

   init_gadget_text(&gad_text[loop],
control_names[loop - TOTAL_FIELDS], FALSE);
   window_gads[loop].GadgetText
= &gad_text[loop];
   window_gads[loop].SpecialInfo      = NULL;
   window_gads[loop].GadgetID
  = loop;

   /* Ensure window height gets set correctly
*/
   window_height = window_gads[loop].TopEdge
+ gadget_spacing + 4;
   }

  /* Terminate list of new gadgets */
  window_gads[TOTAL_FIELDS+CONTROL_BUTTONS-☛
1].NextGadget = NULL;

  /* Now open our window */
  window_definition.Height = window_height;
  if (!(addr_window =
OpenWindow(&window_definition)))
   return FALSE;
  /* OpenWindow failed! */

  return TRUE;
}

/*********************************
  *
  * void close_window(void);
  *
  * Closes our window if it was opened,
freeing any resources that came
  * with it. If the window is not open, this
routine does nothing.
  */

void close_window(void)
{
  /* Close window if it was opened */
  if (addr_window)
CloseWindow(addr_window);

  return;
}

/***************************
  *
  * void init_gadget_text(struct IntuiText
*itext, char *string, BOOL str);
  *
  * Sets up the supplied intui-text structure
to point to the named
  * string. If the str paramter is true, then
the string is placed neatly
  * to the left of a gadget (ie, titling
string gadgets)
  */

void init_gadget_text(struct IntuiText
*itext, char *string, BOOL str)
{
  itext->FrontPen      = 1;
  itext->BackPen              = 0;
  itext->DrawMode             = JAM1;
  itext->LeftEdge             = 0;
  itext->TopEdge              = 0;
  itext->ITextFont     = NULL;
  itext->IText                = string;
  itext->NextText             = 0;

  /* If this is a string gadget, place text to
left */
  if (str)
   itext->LeftEdge = -90;

  return;
}
```

continued from page 70

fonts. The best thing to do is to change the definition in **address_functions.c** to this:

```
char *field_names[TOTAL_FIELDS] =
  {
  "Name", "Address 1",
   "Address 2", "Address 3",
  "Address 4", "Post Code",
  "Phone #",
  "E-Mail", "Comment"
  };
```

I tested this with a few common fonts, including Times and Topaz. A future version of the Address Book could check to see if the text will fit before printing it (this is something you might like to add).

The picture on the previous page shows the finished result. It uses the Workbench screen font when rendering its window, so if you select a silly font, you'll get a silly looking window, because there is no checking yet.

And that's it for this month. Next time we'll properly combine the interface code with the main address book code module and actually get the whole thing working. This will be easy, as you can see from the listing of **address_book.c** so far – most of the groundwork has now been done, so it's simply a case of detecting certain gadget presses and performing actions. Currently each gadget's ID is just shown on the screen when you select it, but it could just as easily be part of a **switch** statement:

```
switch(gadget->GadgetID)
  {
  case 0:
    printf("User just pressed ▼☛
return in the 'name' string ▼☛
gadget\n");
    break;
  case TOTAL_FIELDS:
    printf("User just pressed ▼☛
'PREV'\n");
    break;
  }
```

We'll be installing something like this next month, and simply calling the appropriate functions – most of which we've already written! AS

LISTING 3: INCLUDES

```
/* address_includes.h
  *
  * A file which includes all the stuff we need for
each part of the
  * program.
  */

/* Those include files we keep talking about! */
#include <ctype.h>
#include <string.h>
#include <stdlib.h>
#include <stdio.h>

#include <exec/exec.h>
#include <exec/types.h>
#include <dos/dos.h>
#include <dos/dostags.h>
#include <dos/dosextens.h>
/* If using 1.3 includes, these are in
"libraries/" */
#include <intuition/intuition.h>

/* Prototype definitions for system functions */
#include <clib/exec_protos.h>
#include <clib/dos_protos.h>
#include <clib/intuition_protos.h>

/* Include our own include files */
#include "address_book.h"
#include "functions.h"
```

LISTING 4: DICE_MAKE

```
#
# DICE specific.
#
# This file contains a ▼☛
list of .c files to compile.
#
address_functions.c
address_book.c
address_gui.c
```

LISTING 5: FUNCTIONS

```
/* functions.h
  *
  * All prototypes for our functions
  */

/* Prototypes for our test routines */
void read_record(void);
                    /* Create a new record */
void create_record(void);
                /* Read a record */
void edit_record(void); /* Edit a record */

BOOL read_record_data(char *record_data,
record_number);
BOOL write_record_data(char *record_data,
record_number);
void show_record_data(char *record_data, long
record_number);

/* Functions in the main code section */
void cleanexit(int return_value);

/* Functions from address_gui.c */
BOOL open_window(void);
void close_window(void);
void init_gadget_text(struct IntuiText *itext,
char *string, BOOL str);
```

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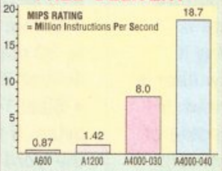
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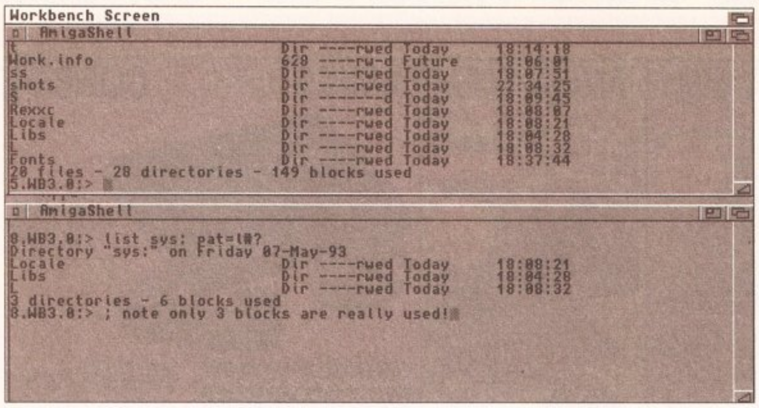
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AmigaDOS's LIST command generates a lot of output – certainly more than DIR! The second window uses a pattern to remove unwanted items.

FIGURE 1: TYPICAL OUTPUT

Type **LIST sys:** and LIST generates a lot of information about all disk-based objects.

```
Directory "sys:" on Saturday 02-Oct-93
CDir —rwed 07-May-93 18:09:52
SystemDir —rwed Thursday 12:59:10
System.info632 —rw-d 07-May-93 18:07:41
This "filenote" is attached to System.info
...
WbstartupDir —rwed 07-May-93 18:07:41
Wbstartup.info632 —rw-d 07-May-93 18:07:41
SDir ——-d Today      19:25:23
LibsDir —rwed 07-May-93 18:08:31
LDir —rwed 07-May-93 18:08:32
FontsDir —rwed 07-May-93 18:09:38
6 files - 13 directories - 44 blocks used
```

Cracking the Shell

Mark Smiddy examines one of AmigaDOS's most powerful and useful commands.

The LIST command shows a listing of files on any disk or directory, like DIR. Unlike DIR though it does not sort the output, and early versions lacked the ability to list all files in all directories. LIST has been pivotal in the development of AmigaDOS as far back as version 1.3 when it was first used to create script files automatically.

The command shares a lot in common with **DIR** in that it is designed to display the contents of any directory. So why have two commands to do the same job? Well, there is more to **LIST** than meets the eye. Here are the most important differences:

- **LIST** displays all the requested objects as it finds them; **DIR** collects the requested object names and displays a two-column list of them sorted by name.
- **LIST** displays the object's name and a lot of extra information over many columns; **DIR** displays just the names of any objects in two columns.

USING LIST

The command's synopsis (shown here) is quite complex:

```
LIST DIR/M, P=PAT/K, KEYS/S,
DATES/S, NODATES/S, TO/K, SUB/K,
SINCE/K, UPTO/K, QUICK/S, BLOCK/S,
NOHEAD/S, FILES/S, DIRS/S,
LFORMAT/K, ALL/S
```

The table on page 75 gives brief descriptions of these. Typical output (stripped down for the example) in Figure 1 on this page could be generated by the following command:

```
1>LIST sys:
```

The information that LIST gives you breaks down into three separate items – head, body and tail.

• The Head

```
Directory "sys:" on Saturday 02-Oct-93
```

LIST's head contains information about the directory being listed, including its name, path and the date it was last modified. It is important to note that a directory's date is changed every time something it contains is modified or a new item is created therein. The date shown in the header is, therefore, the date of the most recent non-directory item shown. The date is only shown if the directory contains one or more items; otherwise the head is something like this:

```
Directory "T:" is empty
```

• The Tail

```
6 files - 13 directories - 44 blocks used
```

The tail shows the total number of files and directories (matching any pattern) in the specified directory. If more than one directory has been scanned (with the **ALL** option) a second footer line appears at the end of the list with the total number of blocks, files and directories listed.

• The Body

```
CDir --arwed 07-May-93 18:09:52
SystemDir —rwed Thursday 12:59:10
System.info632 —rw-d 07-May-93 18:07:41
: This "filenote" is attached to System.info
```

The body is the meat in the sandwich: all the objects matching the pattern appear here, one to a line. By default, the following columns are arranged from left-to-right as follows:

The symbol ☛ means *do not* type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

- **Name:** The name of the object – up to 30 characters left-justified in a field of 31 characters.
- **Size:** The size of the object in bytes. If the object is a sub-directory the word "Dir" is inserted instead. **LIST** does not distinguish between links and real objects. Links are a topic for discussion at a later point.
- **Attributes:** The protection flags associated with the named object. Seven flags are available in the current release and can be changed from the Workbench via **Icons...Information** (Workbench 2+) or the AmigaDOS command **PROTECT.** Possible flags are, when set:

S: Is an AmigaDOS script.
P: Is pure (can be made resident).
A: Is in archive. (Cleared on write).
R: Is readable. Not used in OFS.
W :Is writeable. Not used in OFS.
E: Is executable – probably.
D: Can be deleted.

- **Date:** The date part of the date-stamp.
- **Time:** The time part of the date-stamp.

BEGINNERS BEGINNERS START HERE BEGINNERS

If you are new to the Amiga, the very idea of AmigaDOS – an environment where you have to learn and type commands, one at a time – might seem a little daunting. Why not just stay within the comfortable confines of the Workbench and handle the tricky bits with a CLI utility like Directory Opus or SID?

There are a number of reasons, but "eclecticism" is a good one. This greasy adjective is typically used in the art world meaning to be selective. I choose it to illustrate a point: AmigaDOS is full of big, strange-sounding words that mean little until they are applied. An AmigaDOS user can be eclectic by choosing the best of several similar commands to achieve a similar goal. The SID or Workbench user must remain within the confines of the application's design – no matter how open-ended it purports to be.

Few people would disagree that many operations are more easily performed from Workbench, but very few operations can take full advantage of the machine's multi-tasking capabilities. For instance, what if you wanted to copy some files from one place to another? With

• **Comment:** If a comment is attached to a file, it is shown on the next available line. Comments are strings of 1 to 79 characters attached using the **FILENOTE** command.

This may seem like a lot of information to retrieve for every disk object, but in reality **LIST** involves no more work than **DIR.** All this information is stored in a special block on the disk – called a file header block – that must be read every time something requests information on a file. This information is handed to AmigaDOS applications as something called a FIB or File Info Block. There is so little difference in speed, **LIST** is often more convenient.

LIST OPTIONS

The command has a lot of different options and you can use any number of possible combinations. To keep things simple, this discussion will concentrate on the options in isolation – you should try experimenting with the different combinations yourself. Here are the more complex ones.

• **KEYS:** When this keyword is supplied, every object is shown with a number in square brackets corresponding to the key position of its FIB on disk. The key number is only useful for disk hackers – AmigaDOS commands do not use them directly. (The maximum number of keys on any disk is given by doubling its storage capacity in K – so an 880K floppy has 1660 key blocks.) Example:

```
1>LIST C:LIST KEYS NOHEAD
List  [ 302]    5904 -p-rwed Today
10:11:05
```

• **BLOCK/S:** The size of files and directories is shown as the number of 512 byte blocks it occupies. Note that **LIST** incorrectly shows a directory as being two blocks long. Directories are not shown as "dir" in this mode. Example:

```
1>LIST C:LIST BLOCKS NOHEAD
List 10 -p-rwed Today 10:11:05
```

• **DATES/S:** By default, **LIST** attempts to substitute recent dates by a day name and future dates by the string Future. Example:

```
1>LIST C:LIST NOHEAD
List  5904 -p-rwed Today 10:11:05
1>LIST C:LIST DATES NOHEAD
List  5904 -p-rwed 24-Sep-93
10:11:05
LIST Patterns
```

Typically, **LIST** is used to get information about a complete directory or a single file. Used without arguments, the command lists the current directory. Therefore the following commands are valid:

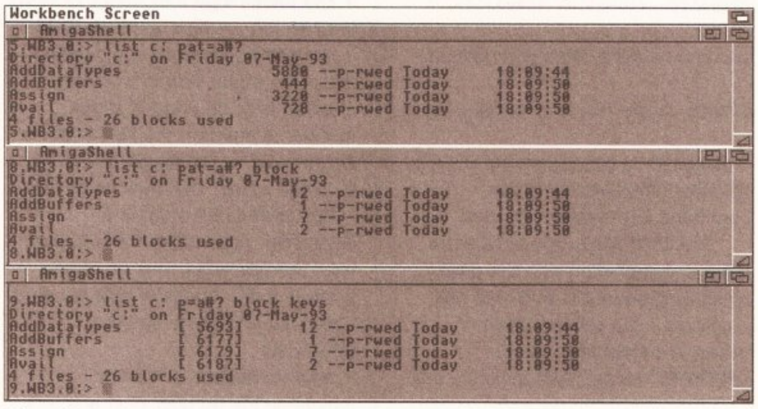
1>LIST; list the current directory
1>LIST SYS:; list the boot disk's root directory
1>LIST DEVS:Printers/EpsonX; list a single file

In AmigaDOS 2, you can supply more than one directory or file like this:

```
1>LIST DF0: SYS: DEVS:
```

That's fine if you want to get information on the whole directory, but what if you want to narrow down the search a little? Let's say you had a directory full of files produced on a word processor and each one ends in the "extension" .DOC. Every time a file is modified, the program renames a previous file of the same name with .BAK.

Note: In the following examples, the header and footers have been removed for clarity – the screenshots will illustrate what you really see.



The effect of using BLOCK and KEYS switches is profound.

```
1>LIST MyDir
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
MyFile.BAK4227 —rwed 18-Sep-93
19:21:04
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
Work1.BAK  22 —rwed 21-Sep-93
12:08:30
```

There could (and usually would) be dozens of files here, but these are sufficient for the example. The files marked **".BAK"** are redundant and we only want to list those ending in **".DOC"**. AmigaDOS provides a special facility called pattern matching which allows us to use an "ambiguous string" as part of a filename – it means that part of the filename can be anything.

Pattern matching is a complex topic to be covered later in this series on AmigaDOS, but one particular pattern appears all the time **"#?"** – which means match anything. (PC users will be familiar with this as **"*"**.)

LIST's pattern keyword (**P** or **PAT**) enables you to specify a pattern like this:

```
1>LIST MyDir P=#?.DOC
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
```

From AmigaDOS 2, this keyword is retained for compatibility only and the following is simpler:

```
1>LIST MyDir/#?.DOC
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
```

In AmigaDOS 2 you can narrow the search down even further by using a substring search too. This attempts to find any specified series of characters *within* a name. Substrings must be picked out with the **SUB** keyword like this:

```
1>LIST MyDir/#?.DOC SUB=File
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
```

Or, using SUB on its own:

```
1>LIST MyDir SUB=ork
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
Work1.BAK  22 —rwed 21-Sep-93
12:08:30
```

LIST DATE MATCHING

Users with battery-backed clocks can also take advantage of **LIST's** ability to match dates. This option may be combined with the pattern and substring matching described above, but is shown singly here for clarity.

The **UPTO** keyword takes an AmigaDOS date string and lists files that were created or modified up to and including a specified date:

```
1>LIST MyDir UPTO 20-Sep-93
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
```

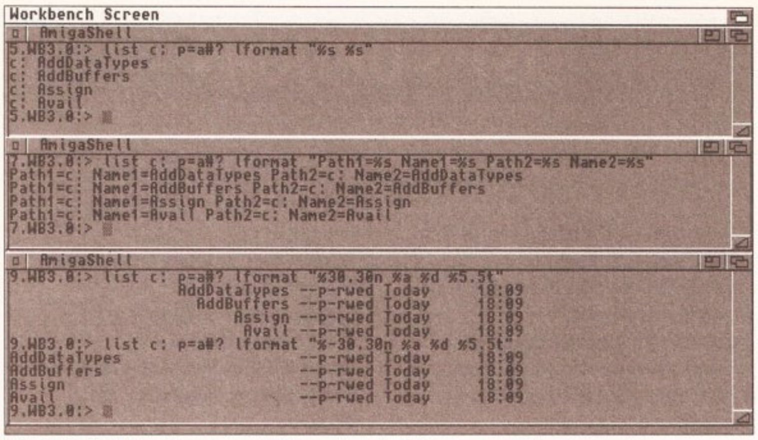
LIST'S OPTIONS

These are the options in LIST:
DIR/M: One or more directories to be searched. May include a pattern from 2.0.
P=PAT/K: A file pattern to search for – obsolete from 2.0.
KEYS/S: The object's physical disk position is shown.
DATES/S: Absolute dates (weekdays are shown as dates).
NODATES/S: Date output is suppressed.
TO/K: A file to send output to.
SUB/K: A substring to match in the filenames.
SINCE/K: Files are listed occurring after the date.
UPTO/K: Files are listed up to the specified date.
QUICK/S: Only filenames are shown.
BLOCK/S: File sizes are shown in blocks.
NOHEAD/S: The header and footers are disabled.
FILES/S: Only files are shown.
DIRS/S: Only directories are shown.
LFORMAT/K: A special output formatting string.
ALL/S: All directories are searched. (2.0+ only).

Workbench you simply drag the respective icons from the source to the destination – from AmigaDOS you have to enter a command.

Now what if you suddenly realise you have copied the wrong icons? You have to wait until Workbench finishes, go back and delete them, and start again from scratch. This can happen when you use AmigaDOS but you can stop the command immediately – so the total time to complete the operation is much shorter. In addition, AmigaDOS allows you to select files by group much more accurately than is possible from Workbench. It also affords simpler access to a range of public domain and shareware utilities that can only be accessed from the Shell environment.

AmigaDOS is powerful and perhaps a little difficult to learn – Workbench is suitable for everyday tasks when you are not in a hurry. The two systems complement each other wonderfully. You can "get at" AmigaDOS by opening the Shell icon – you'll find it lounging around on your Workbench disk. Even if you have never done so before, try it now – you have nothing to lose.



The LFORMAT options are wide and varied. Here are a few examples.

LIST'S LFORMAT QUALIFIERS

These are the qualifiers available with LFORMAT:

%S: Pathname only.
%S%S: The pathname and object name.
%S%S%S: Pathname and object name, pathname.
%S%S%S%S: Pathname, object name, pathname, object name.

From 2.0 onwards:
%A: The object's attributes (protection flags).
%B: File size in blocks.
%C: Comment.
%D: Creation (or last modified) date.
%K: Physical position on disk.
%L: Length in blocks.
%N: Name.
%P: Complete path (without an object name).
%T: The time associated with the object.

```
MyFile.BAK4227 —rwed 18-Sep-93
19:21:04
```

Similarly, the **SINCE** keyword only lists files that were created or modified on or after a given date:

```
1>LIST MyDir SINCE 20-Sep-93
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
Work1.BAK  22 —rwed 21-Sep-93
12:08:30
```

USING LFORMAT STRINGS

The **LFORMAT** keyword is what makes **LIST** so very special. Without it, most people would manage with **DIR.** When used in combination with **TO,** this keyword can write entire script files automatically! This facility is used by the meta-AmigaDOS commands (scripts) **SPAT** and **DPAT** incidentally, to add pattern matching to those few commands that lack it.

An **LFORMAT** string is made up of any combination of letters and special qualifiers – qualifiers are a percentage symbol followed by a letter. The only qualifier supported in AmigaDOS 1.3 is **%S** – and it has different meanings depending on the number of times it is used (up to a maximum of four). However, this should not be viewed as a shortcoming. The available qualifiers are summarised in the table at the top of this page.

It is important to note here that thanks to an obscure bug in the 1.3 **LIST** command, **LFORMAT** strings do not work unless the date is set correctly. If (and only if) you are using AmigaDOS 1.3 and the date command returns like this:

```
1>DATE
<unset> <unset> <unset>
```

or

```
<invalid> <invalid> <invalid>
```

you should set a false date like so:

```
1>DATE 01-Jan-90; 1.3 patch only!!
```

This kludge is necessary if you want to make effective use of the command in the early versions.

The **LFORMAT** keyword can be used in conjunction with the date windowing and **PAT, SUB** and **ALL** keywords – the others have no effect. A simple example of **LFORMAT** usage might look like this:

```
LIST SYS: LFORMAT ▼☛
      "Directory: %S Object: %S*n"
```

LFORMAT strings do not send a newline character, so you must specify one – the **"*n"** in the above example does this.

ADVANCED LFORMATING

The introduction of AmigaDOS 2 saw a large number of commands re-coded, and **LIST** was among them. The **LFORMAT** string is no longer hard coded and is instead passed through a ROM function called **RawDoFormat.** C and assembly language programmers may be familiar with this function because it provides simple C-style output formatting.

A formatting parameter appears between the % sign and the qualifier and takes the following format:

```
-nnn.nnn.
```

- **The minus sign** indicates the string is to be left justified within its field.
- **nnnWidth** is a number indicating the width of the field in which the qualifier is to be printed. If this number is omitted, the field width is determined by the length of the qualified string. This may be omitted.
- **The period** (full stop) is a Separator, separating the field width from the precision. This must be present if the precision digit is being used, but should be omitted otherwise.
- **nnnPrecision** is a number indicating the number of characters to display starting from the right end of the string.

This may all seem a little complex at this stage (unless you program in C) but it is simple and very convenient. Here are some examples:

1. We can simulate use of the **QUICK** switch like this:

```
1>LIST C:LIST LFORMAT "%n*n"
List
```

2. Or improve on it slightly like this:

```
1>LIST C:LIST LFORMAT "%p%n*n"
Workbench3.0:C/List
```

3. AmigaDOS filenames are limited to a maximum of 30 characters, but few people use more than eight plus a three-letter extension (the maximum that PC-compatibles can handle in any case) – so we can set a maximum field width to 13 – that is, eight for the name, one for the extension plus one for the "." like this (brackets are shown for clarity):

```
1>LIST C:LIST LFORMAT "(%13n)*n"
(          List)
```

4. If a name is too long, it is trimmed back to fit inside the field. Most will be flushed right – although you can override this by including a minus symbol like this:

```
1>LIST C:LIST LFORMAT "(%-13n)*n"
(List          )
```

5. The length of filenames can vary between 1 and 30 characters. By using 30 as a field width, you can ensure that the listing lines up correctly like this:

```
1>LIST C:(LIST|DIR) LFORMAT ▼☛
                     "%30n@%t*n"
List  @12:31:32
Dir  @12:31:34
```

6. AmigaDOS always prints the seconds as part of the time. It has a fixed field width of eight digits – two for each of the three numbers and two extra for the colon separators. Therefore, we can use the precision digit to trim off the unwanted seconds and second colon like this (note the period in front of the digit):

```
1>LIST C:LIST LFORMAT "%n ▼☛
              modified at %.5t *n"
List modified at 12:31
```

There is no limit to the length of the **LFORMAT** string apart from the maximum length of the command line – 254 characters – so this gives a lot of scope.

Later in this series I'll be demonstrating how to use **LFORMAT** strings in conjunction with the **TO** keyword to produce script files. AS

JARGON BUSTING

Date-stamp – The date and time form an important part of any object's description. A date-stamp is added to any file or directory when it is created or modified. Date-stamping is only useful when your machine is fitted with a real-time, battery-backed-up clock. You can get limited use from them by setting the time and date every time you boot the machine – but this is a nuisance.

Extension – Filename extensions have been around almost as long as filing systems and are used to group files of the same type together in listings so they can be picked out quickly. Many computers are still limited to eight-letter filenames, separated by a period from a three-letter extension – **"work.doc"**, **"prog.exe"**, **"dump.asc"** and so on. While the Amiga does not suffer from these constraints, it can help to use extensions. Digita's *Wordworth,* for instance, saves its files with the extension **".WW"** whereas *Pen Pal* uses **".WTR"**.

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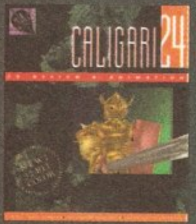
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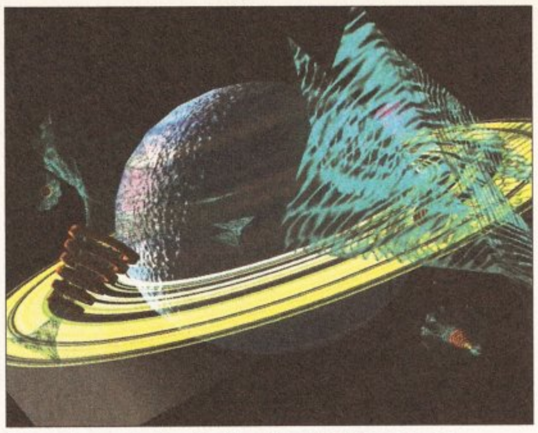
CALIGARI CORPORATION

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Mountain View,
CA 94043



Textures revisited

A year after the release of Essence I comes a new collection of algorithmic textures for Imagine users. Gary Whiteley cops a feel...



Space is no longer the final frontier if you have Essence II. Taste may be, but that's your problem.

Amazing as it may seem, only a year after the release of the excellent *Essence I*, Apex Software Publishing have unleashed a brand new set of amazing algorithmical textures for the discerning *Imagine* user. Better still, some of these textures don't exist on even the most high-spec rendering equipment in existence, so you'll be able to produce effects that no other software is currently capable of and make those Silicon Graphics Indigo 2 owners green with envy (even if only a little bit).

Essence II comes on two disks, each packed with textures, all divided into various sub-groups. There are textures to cover Space, Water, Bump, Organic, Tile and Miscellaneous, but don't get the idea that that's all they can be used for. Mixing and matching is the name of the game, and to make it all so much easier Apex have thoughtfully included a whole clutch of attribute settings to make using more complex combinations of *Essence II* textures a breeze. So if you wanted to cover a spaceship in hull plates that have a battered, space-weathered look, just select a suitable attribute from the list (for instance, Dirty Tile) and your wish is granted.

You also receive a well illustrated, well laid out, easy-to-access manual that helps you get off to a quick start, though at times it does tend to take the level of a user's knowledge a little for granted, and I would have felt happier if a few tutorials had been included.



All the textures in this image are from Essence II (except the fish, which use an Essence I texture).

GETTING YOUR FEET WET

Among the most spectacular of the new textures are probably those associated with water and water-style effects. *Essence II's* Water textures include waves, ripples, drops and caustics (the patterns that you see when light shines through rippling water). Like all the other textures, Water textures can be animated over time by morphing them from one position to another, meaning that any texture can be made to change shape, move, appear, disappear, change colour or whatever its specific parameters allow. Take the Raindrops texture (which simulates raindrops falling onto a surface) as an example: you can specify how frequently and how hard the raindrops fall, the width and height of ripples they produce and an element of randomness so that the rain looks natural. When you morph the texture over time the result is a very realistic rain-on-a-puddle effect. The same applies to water drops, waves and caustics and there's even a Water texture that will reflect ripples back from predefined rectangular boundaries, so you can make convincing-looking baths with dripping taps.

But that's just the start. Let's take a look at the rest of *Essence II's* textures.

- **Bumpy** There are metallic sheens, bubbly blotches, crumpled paper, faceted, pitted and stucco textures for a wide range of uses. Rocks, walls, fungus-like growths and shiny lettering are but a few of the applications for bumpy textures.
- **Organic Textures** Some of these textures beggar sensible description, so it's no wonder that Apex have had to resort to some unusual terms such as "crusty alien snot" to try to invoke some idea of the effects available. Nevertheless, there are some real gems here. Crusts, flecks and veins are the three basic textures but the range is huge when colours and texture parameters come into play. Organic textures can be used to construct surfaces which can look like reptile skin, dandruff, pebbles, oozing crud, mould, coral or whatever else you can figure out.
- **Space** Apparently some of the most requested new textures have been for space-type stuff, so Apex have obliged with a fine collection which includes plasma, gas planets, spaceship hull plates (complete with ridges, discolouration and weathering), latitude and longitude lines for easy Earth maps, metallic machinery surfaces and planet rings.
- **Tiles** These are, as you might expect, textures that continuously repeat across a surface. There are flagstones (for crazy paving), scales (for reptiles, fish, armour etc), wooden shingles, roof tiles and soft checks. Like most of the other textures they all include an element of bumpiness so that they will look much more realistic than a flat brush-mapped texture.
- **Miscellaneous** This category includes fibre, woodgrain, polkadots,

TEXTURES TOO

Here's another set of textures, but of the more traditional "brush-map" type – they are actual images which you can wrap directly onto 3D objects or use as backgrounds.

In *Textures II* from Alternative Image all the images are derived from scanned photographs of natural objects, mostly rocks, with the exceptions of cork, sand dunes and treebark – in all, 12 textures in a range of different formats. Each texture is supplied as a 400 x 400 pixel 24-bit image, 320 x 512 HAM, 8-colour 640 x 512 image and either 8-colour or 4-colour 640 x 512 greyscale image for bump or altitude mapping. This means that you get 12 disks, each containing one texture in its four various formats.

As textures go there is nothing particularly outstanding about this set, except that they save you a lot of time and effort hunting down, scanning and converting your own images. The quality is high but there are just too many rocks included and not enough of anything else – and several of the rocks are incorrectly named, but that's being pedantic.

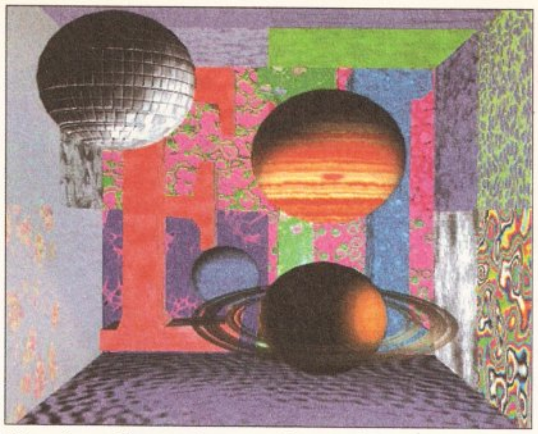
The obvious uses are for mapping onto 3D objects as bump, filter, reflection or brush maps in programs such as *Real3D, Imagine, Lightwave* and *Caligari*, to give a more realistic look to a scene. They could also be used as backdrops, tiled onto floors, or used in a 2D paint program for textured backgrounds, special effects and so on. They might even be useful in DTP.



Textures II brings you 12 new bitmap textures from Alternative Image, each of them in four formats.

THE BONUS DISKS

Bundled with *Texture II* are a couple of tutorial disks for either *Imagine* or *Real3D* (you choose which), including pointers to some of the more esoteric aspects of each program, with plenty of examples and projects for you to experiment with. For example, the *Real3D* tutorials include help in using Freeform curves, as well as improving your clip



Planets, wallpaper, fancy surfaces – just a small part of the power of Essence II. Reminds me of my local...

radar (yes – a texture that looks like a radar screen, complete with scanning beam) and Julia, an effect similar to the Mandelbrot texture of *Essence I*.

One *very* useful feature is that *Essence II* comes complete with a set of "thumbnail" images which can be directly displayed on your Amiga screen, so if you aren't sure what the PlasticGiraffe, SmallPox or Cheese&Broccoli texture combinations look like all you have to do is display the pictures to find out. And no, I'm not making these names up. Apart from being very clever, Apex also have a finely-tuned sense of the ridiculous.

Requirements: *Essence II* requires the FP version of *Imagine* (v0.9, 1.0, 1.1 or 2.0) or Turbo Silver, as well as an accelerated Amiga fitted with an FPU (that is, 68881 or 68882 maths co-processor). You'll also need a couple of Mb of hard drive space free – so it helps if you have a hard drive too.

• Gary Whiteley can be contacted by e-mail as drgaz@cix.compulink.co.uk (all one word).

SHOPPING LIST

Essence II ....$140 (US).
Expect to pay around £100 (or less) in the UK.
By Apex Software Publishing
Available from
Alternative Image
☎ 0533 440041 and
other good Amiga dealers.

CHECKOUT Essence II

Features
●●●●●●●●●●
Loads. About the only limits are your Amiga and your imagination. Mix these textures up for some really wild effects.

Documentation
●●●●●●●●●○
Clean, slick and well-presented, with a touch of wacky humour thrown in.

Ease of Use
●●●●●●●●○○
As easy as you could hope, given the complexity of *Essence II* and *Imagine*.

Quality
●●●●●●●●●●
You won't believe the textures are the products of mathematical equations!

Value for money
●●●●●●●○○○
Will probably sell for less than the projected price, but it's still worth the money if you're serious about 3D work.

Overall rating
●●●●●●●●●○
If you're into *Imagine*, buy *Essence II* (and *Essence I* as well!) – it may not be cheap, but nothing else comes close.

mapping abilities, and the *Imagine* disks include constructing a piston animation using the Cycle editor and how to successfully make a rotating, brush-mapped Earth.

I must declare an interest: the *Imagine* tutorial disk is all my own work, while the *Real3D* disk is by Henri Bujko of Alternative Image, designer of some past *Amiga Shopper* covers. The tutorial disks can also be bought separately.

SHOPPING LIST

Textures II £40.00
From Alternative Image,
6 Lothair Road, Aylestone,
Leicester, LE2 7QB.
☎ 0533 440041.

CHECKOUT Textures II

Quality
●●●●●●●●●○
High quality images suitable for a range of applications.

Documentation
●●●●●●●●○○
Scant, but not really necessary anyway.

Value for Money
●●●●●●●○○○
Reasonable.

Overall rating
●●●●●●●○○○
Not the most awe-inspiring set of textures around (unless you're *really* keen on rocks) but you'll find enough of use to make it well worth buying.

VLAB YC IFR

Let me explain the cryptic heading. VLAB YC is MacroSystem's excellent VLab YC video framegrabber card for any Amiga which has a spare Zorro slot (that is, not A500s, A600s or A1200s). *IFR* is the new software module for it which enables VLab YC to grab entire sequences of frames direct from *any* video recorder, regardless of whether or not it has remote control or timecode, even a plain old domestic VHS deck. *IFR* means Interleaved Frame Recording. All clear?

IFR is part of VLab YC's new software, used to grab any sequence of video frames from any kind of video source – as long as it has either a composite or YC output. However, the actual amount of data and the speed at which it can be grabbed depends entirely on the specifications of the host Amiga. *IFR* is very memory-hungry – for instance grabbing hi-res colour images takes about 0.5Mb for each *frame*, even before they are converted to IFF files, so if your Amiga doesn't have much RAM you'd better be sure your hard drive has plenty of space.



Grabbing consecutive frames in colour from any video is now easy with VLab YC's IFR software.

HOW IT WORKS

Initially *IFR* searches for a unique-looking "Key Frame" near the point from which it has been told to start grabbing. This frame will be used as a reference by the software, because an *IFR* sequence requires multiple passes of the videotape in order to grab all the intermediate frames.

Once the key frame has been found the grabbing begins, with VLab grabbing subsequent frames as quickly as possible. The problem is that the hardware can't keep up with the 25 frame per second rate at which video images are displayed, so as a result it may only grab one in every ten frames (depending on the speed of the Amiga and the defined grab size).

Once the first pass has been made the user has to wind the tape back to just before the key frame and repeat the grabbing process, whereupon VLab will grab another sequence of images, but not those it has already captured. The process is repeated until all the frames are grabbed.

To make all this easier there's some additional hardware called an AirLink which can be used to control VCRs which have infrared remote control by simply running an ARexx script. At the time of writing the AirLink wasn't readily available, but the asking price is expected to be £69.

THE RESULTS

Amazingly enough it *is* possible to get frame-accurate grabbing with the *IFR*. It takes a bit of setting up – especially adjusting the thresholds for the key frame definition – but once running it works very well. I grabbed sequences from both VHS and U-matic video and was very impressed with the results, even though I had to do all the rewinding and cueing up by hand – which is where the AirLink would really have come in handy.

I animated the sequences back together and they looked very smooth; it was certainly hard to tell if any frames were missing or not.

IFR will be invaluable to Amiga artists who wish to take grabs from video sequences and alter them, rotoscope them, or otherwise process them for further use in video, graphics, DTP, MPEG, CDTV, or special effects applications.

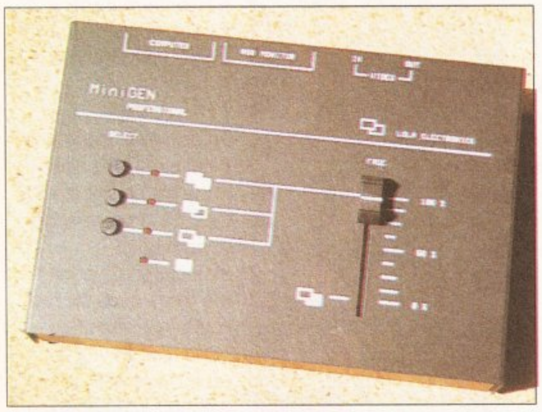
• The *IFR* software is supplied with the VLab YC (£381.88). Contact Amiga Centre Scotland (☎ 0896 87583) for more details.
Requires: VLab YC, AmigaDOS 2 (minimum), a free Zorro slot and lots of free memory or hard drive space or both.

The full genlock

Gary Whiteley locks his sights on Lola's new L1000 MiniGEN Professional genlock and L520 modulator.

With two new releases following the relaunch of the MiniGEN genlock (reviewed in *Amiga Shopper* last issue), Lola Electronics are rapidly re-establishing themselves in the Amiga video arena.

First up is the L1000 MiniGEN Professional genlock. Unlike the MiniGEN, this is a largish black box which connects to any Amiga's RGB port via an extension cable. It is a composite-video-only genlock with its own RGB pass-through, enabling you to continue using your RGB monitor for quality graphics production, instead of having to make do with a composite video monitor. It has selection buttons for Amiga, Video or genlocked graphics, and a fader for cross-fading between graphics and video. Power is drawn exclusively from the Amiga – something which might possibly be a cause of concern for users of underpowered A500s.



The MiniGEN Professional is a low-cost, but good quality, British-made genlock which will give the RocGen Plus some serious competition.

The MiniGEN Professional is easy enough to connect and uses professional-quality BNC connectors for its video input and output to ensure good, durable connections. There are no DIP switches to set up because the only keying mode the genlock uses is Colour 0 (that is, the first colour in the Amiga's palette). One remarkable feature is that it can even output perfectly stable video signals without an external video input being needed to lock it up with the Amiga, so good-quality graphics can be recorded directly from the L1000 without bothering to connect it to a video input – a feature which is very unusual for a genlock in this price range.

As for the the rest of its genlocking functions the L1000 works well, providing crisply-keyed output with little in the way of colour distortion or noise. I should note, however, that the first L1000 I was supplied with did have a tendency to exhibit a dark outline on the left of all keyed graphics, a problem which Lola quite rightly took seriously enough to investigate and then confirm that I had a faulty unit. Its replacement worked perfectly.

IT'S A MODULATOR!

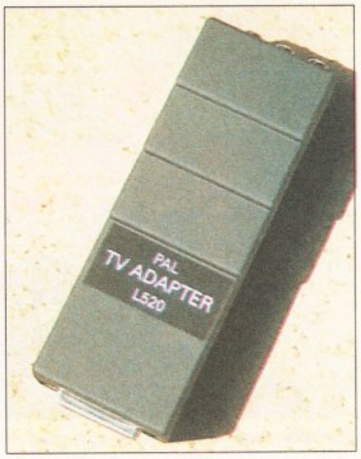
It's been a long time since anyone produced a modulator for the Amiga and you might well be wondering why, but it would seem that Lola have sniffed out a potential market left by the disappearance of Commodore's own, almost unobtainable, A520 modulator and come up with their own solution – the L520.

If modulator is an unfamiliar term to you then here is what it does (in a non-technical nutshell): it converts the RGB and audio output of the Amiga into a signal which can be displayed on any domestic TV set simply by plugging the modulator's TV output into the aerial socket and tuning the TV in. Why? So that you can save money by not buying a real RGB monitor, of course! The L520 also has a composite video output (which is just the video signal on its own) so that you can either record the Amiga's output to tape or display it on a composite video monitor. Note that the composite output from the L520 cannot be expected to match the quality of a "proper" genlock or video encoder, however.

If you have an A600 or A1200, of course, you don't need a modulator – your machines already have modulated output built in. The L520 is mainly aimed at A500 users who want to use a TV set with their Amiga for playing games, though it will also work perfectly with A2000, A3000 and A4000 Amigas, should you have a need.

The quality is as good as can be expected (that is, nowhere near as good as RGB output) and I had absolutely no problems getting the unit up and running. After all, once it's plugged in and connected there's not much else to do. It sounds good too, pumping out Amiga sound rather nicely. The composite output is pretty good as well, especially for less than £30, though it's not up to anything much beyond domestic use.

The only trouble the L520 might cause is that it sticks out about six inches horizontally behind the Amiga, so you'll need the space to accommodate its long, black plastic, form. Alternatively you could always buy one of Lola's optional extra RGB extension leads. AS



Will it replace Commodore's elusive A520? Lola's L520 modulator enables you to use your A500 (or even A4000) with a TV set, as well as record its output to tape.

SHOPPING LIST

L1000 MiniGEN Professional £149.95
From Lola Electronics, Freepost, Market Harborough, Leicestershire, LE16 7BR.
☎ 0858 880182.

SHOPPING LIST

L520 Modulator ....£29.95 including leads.
From: Lola Electronics, Freepost, Market Harborough, Leicestershire, LE16 7BR.
☎ 0858 880182.

JARGON BUSTING

Composite Video – A common video-only signal used by many video recorders, genlocks and monitors. Contains all the components required to make a video picture in a single signal.

Genlock – Hardware for enabling graphics to be keyed over video, for titling and other effects.

Modulator – A unit that converts the Amiga's RGB output into a format usable by TV sets or VCRs.

RGB – Red, Green, Blue; the Amiga's internal video format. Can be used by compatible monitors but has to be converted to composite, S-VHS or other video formats for recording or genlocking.

CHECKOUT L1000 MINIGEN PRO GENLOCK

Quality
●●●●●●●●○○
Very good output, both genlocked and free-running. Colours generally good and graphics keyed crisply, with little (if any) noise to degrade the image quality.

Documentation
●●●●●●●●○○
I saw only a pre-press version, but it looked thorough and easy enough to understand.

Value for Money
●●●●●●●●○○
Good value compared to most others.

Overall rating
●●●●●●●●○○
This *has* to be a good buy! Clean output, smooth fading and RGB pass-through – a well-produced, affordable genlock ideal for home video and more.

CHECKOUT L520 MODULATOR

Quality
●●●●●●●●○○
Good quality RF or composite outputs.

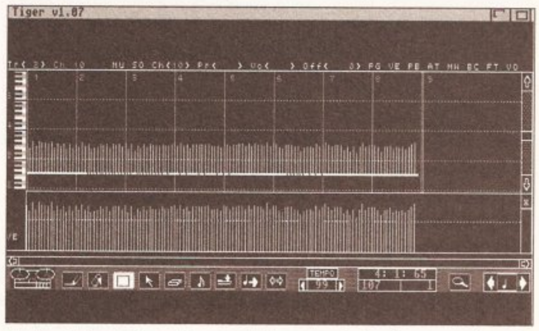
Documentation
●●●●●●●●○○
Short and sweet. And useful.

Value for money
●●●●●●●●○○
£29.95 seems to be the standard price for modulators, so why should this one be any different?

Overall rating
●●●●●●●●○○
As the only modulator easily obtainable, the L520 has to be good value for money if you either can't afford an RGB monitor or want cheap composite video output for budget video recording.

Creative sequencing

Are you using your sequencer to its full potential? Tim Tucker shows how you can do a lot more with it simply by using more of it.



A good graphic editor enables you to look more closely at all aspects of the music you've recorded.

One of the great things about MIDI is that it doesn't require a lot of equipment to yield good results. Armed only with an Amiga, a sequencing program and a multi-timbral keyboard, you can put very complex pieces of music together in your bedroom. But sequencers are capable of a lot more than just recording music, and if you use a little imagination you can get a whole lot more interesting ideas out of them. This month, we'll look at some of the extra benefits you can get from using the features of your sequencer.

One of the greatest assets of a sequencer is its ability to edit, or alter, the events that are recorded into it. Every sequencer has this feature, and it should certainly be taken advantage of as much as possible. Forget endlessly re-recording takes because they're not up to scratch – that problem should only apply to tape machines. With a sequencer, it can be far quicker to use the editor to tidy up the few mistakes you have made than to wear your fingers out playing the same part over and over again. Certainly a few wrong notes can be easily salvaged, even if they are sitting in the middle of complex chord changes.

If you find yourself playing the odd wrong note while you're recording, don't stop and try again – carry on, and when you're finished, take a look in the editor to see how much damage has actually been done. It may have sounded awful at the time, but it can often turn out to be a simple matter of deleting a couple of notes, or moving the pitch of one up or down a semi-tone. Try recording a longer track and recording a few versions of the part in succession. For example, if the part you want to record is a two-bar piano riff, set the sequencer to record eight bars, and play the part over four times, ignoring any mistakes that occur. When you've finished, listen back to the whole thing, see which is the most successful and edit it if necessary. You may find that the first half of one two-bar sequence is perfect, and the second half of another has no mistakes either, in which case simply cut and paste them both together and get rid of the rest.

TAKE THE PRESSURE OFF

It may sound unmusical to ignore mistakes and tamper with your natural playing, but you should find that taking the pressure off having to get it right every time actually relaxes you into performing better anyway. Also, continually stopping and starting to get the same part right is often more damaging to the feel of a piece, and you may find yourself getting bored and powering down for the evening as a result. Initial ideas should be got down as quickly as possible, so that you don't lose track of where you were going with it in the first place. Once you've recorded more parts to complement it, you can always go back and re-record the original with a more natural feel.

Of course, most sequencers provide many ways of making the recording process easier in the first place. Don't be afraid to slow down the tempo to record tracks if they're especially tricky – you can speed them up in the sequencer afterwards. This technique can also work splendidly for creating ideas you simply wouldn't have come up with at the standard tempo. If you want to experiment with melodies or harmony parts, try slowing the piece down to half or even a quarter of its original tempo, and doodle about. You should find it a lot easier to fit two or four notes into every beat, and while it may sound a bit lame at the slower tempo, move it back to its original speed and it takes on a new life. Don't forget that it doesn't all have to be good. Your sequencer's cut and paste functions are extremely useful in these situations, and if you find the odd cluster of notes that really work, save them and discard the rest. The best music is normally built up from the simplest ideas, and you could find whole new riffs or melodic phrases that will spark you off into new areas.

QUANTISATION

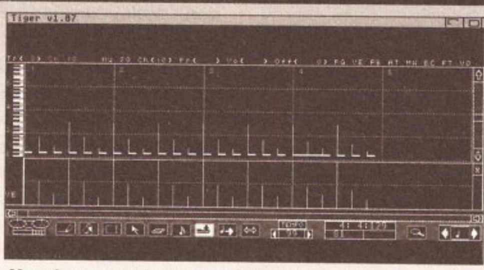
Many of the problems you have with your music are associated with its timing. Either the notes go out of time completely, or the feel is not quite what you were looking for. The quantisation feature is very useful for these situations. You may say that you're looking for a natural groove, and that you don't want to commit it to strict timing values. But if you can't get the feel right by playing it, you can always use the editor to inject the groove, and it's far easier to tamper with the timing of a track if it's been quantised in the first place. Music recorded at higher resolutions has very subtle timing relationships, and altering one note can throw the whole thing into confusion. It's better to get it exactly right, then move individual notes or clusters around. The effects of what you're doing are

DELAYS AND ECHOES

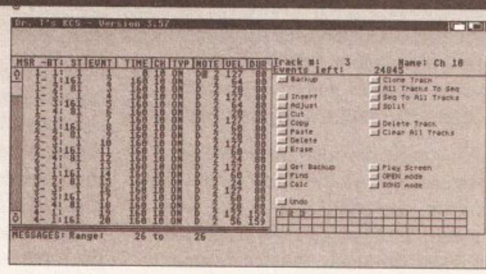
You can easily re-create the effect of an echo or delay box in a sequencer, by editing the velocity values. For example, play a snare drum on every beat of one bar – that is four equal hits. Now go to the editor and give the first beat a velocity of 128, the second 64, the third 32 and the last 16. The effect is of a loud snare hit with gradually diminishing echo following it. This can be very effectively integrated into your drum arrangement by simply copying the bar you've created and pasting it over the other drum parts.

For more exotic effects, make the distance between the hits shorter. A good way to create a dub style echo is to play the part in quarter note triplets, and do the same trick of reducing the velocities for notes 2 and 3. This works very well against a sixteenth note backing.

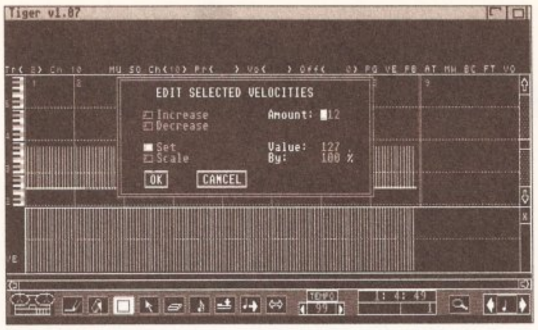
You can create delay effects in a similar way. This technique works ideally with a lead synth or guitar part. Increase all the velocities of the original part to their highest value, 128. Then make a copy of the track. Paste the copy a sixteenth or eighth note ahead of the original, and decrease the copy's velocities to 64. The result is the original part playing at full volume, with an exact copy of it playing a sixteenth note later at half volume, and this gives a very U2-type feel to the lead line.



Here's an example of a dub style echo, created by editing the velocities of the individual notes. They are grouped in threes in this case.



Here's the same example in the event list editor. You can see the velocity values diminishing in groups of three in the VEL column.



It' s often a lot easier to edit hi-hat parts if all the notes are at the same velocity. Here, they're all set to their highest possible value, velocity 127.

far more clear.

One of the best ways to make quantised music more natural is to shift the timing of different tracks against each other. The shifts should be very small, using the highest resolution you can get away with. For example, if you're using a sequencer that has a resolution of 240 pulses per quarter note (such as Dr T's *KCS),* try moving the entire hi-hat part forward a couple of pulses. This is not enough to make it sound out of time, but just gives a slightly different feel to the rhythmic relationship between the parts. It's best to record the drum parts first, and if you have any musical parts already recorded, mute them while you experiment with different time shifts. Hi-hats and snare ahead of the beat sound slightly rushed and "up", giving an urgent feel to the rhythm, very useful for choruses or main sections. On the other hand, dropping them back in time makes the track sound more laid back and relaxed, which could work well for the verses. The bass instrument can be manipulated in this way too, for even more rhythmic interaction. Most sequencers don't enable you to push events back before the first beat of bar one, so if you want a part to drag behind by a couple of clock beats you have to move all the other tracks forward in time instead. This is no great hassle, and once it's done you can just treat them as normal tracks.

Try experimenting by moving individual notes within a track very slightly forward or backward in time. If you want a bassline to have a bit more swing, leave the notes which play at the beginning of bars dead on the beat, and shift the notes in between around by a pulse or two. Again, don't make the changes too obvious, or they'll just sound like mistakes, but keep them just subtle enough to create a groove. If your sequencer can record tempo changes, try increasing the tempo very slightly in the choruses, by about a fifth of a beat per minute if possible, again to give it a bit more life and distinguish it from the feel of the verse.

A good way of breaking the monotony of sections is to record them twice over. For example, if you have a very regular four-bar chord pattern, instead of recording four bars and looping it, record two lots of the pattern, making an eight-bar track, and loop that. Then use the editor to make minor variations in the second four-bar section. Again, they don't have to be major changes – perhaps just deleting a note or two, or adding in a linking note. Moving notes forward or backwards by one sixteenth note can produce very effective syncopations to complement the initial idea. The effect is subtle, but gives more of an impression that someone is actually playing the part. It's also useful for percussive devices, such as drum fills followed by a crash cymbal. Every four bars would probably be too often, but on every eight it really punctuates the track.

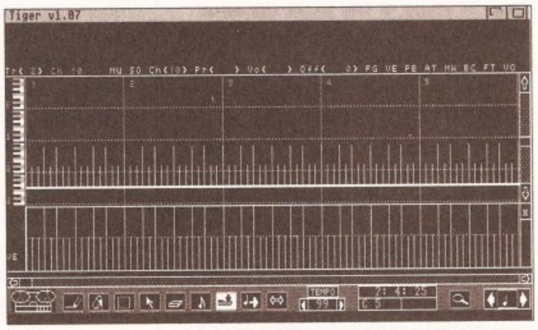
If you're writing a standard verse/chorus/verse/chorus arrangement, try to vary the sections. Keep the first verse fairly sparse, and perhaps add a cowbell or tambourine in the second verse. Percussion is a great way to lift a track, and subtly gives the impression that the song is progressing, even though it does consist of repeating sections. Do you really need both the piano and the guitar part in the first chorus? Perhaps string harmonies or brass stabs can pick up the song at the end. These are things you can experiment with easily in a sequencer, by simply muting out parts during certain sections and bringing them back in later.

If the ideas sound good, edit the tracks and make the changes permanent. Too many options can be confusing, and you'll find that when it comes to recording to tape, you're not sure what you're supposed to be muting and when. The flexibility of a sequencer is a great thing, but if you don't make decisions you'll find your music ends up going nowhere. If you're really not sure which way to go, save the different arrangements to separate files. This way you can easily hear which works best, by comparing the different versions.

If you find ideas drying up while you're writing a song, try manipulating the music you already have to create new sections. Some sequencers have a reverse function, which takes a track and places all the events in the reverse order. Try this with bass lines, or even drum parts. Even if it doesn't sound right, it may well give you some new ideas to work on.

The velocities of notes are very important in governing the feel of a track. If you try recording a drum part and leaving the velocities as you recorded them, you'll find that the result is a bit wishy-washy and not very solid. It's certainly not natural, since hitting drum heads with sticks is far more likely to produce steady rhythms than tapping a key on a keyboard. If you want strict, dancey drum parts, you should generally make sure that the kick drum notes are all playing with equal velocities, ideally velocity value 128, to really pound out the beat. Snare back beats, on 2 and 4, should also have equal prominence, whereas any snare hits played between the beats can afford to be a little less strict in velocity terms.

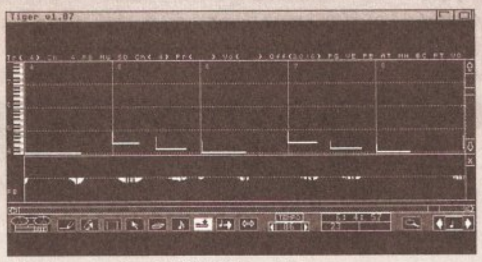
Hi-hats often benefit from careful editing of the velocities. At first, record them all at a velocity of 64 if possible, or edit them all to that value. Then try making certain notes of the hi-hat part jump out, by increasing velocities on certain notes only to 128. In a group of eight hi-hat notes of equal length, try accenting the first and third notes and leaving the others at 64. You can create some very interesting rhythmic punctuation this way, and it's easy to come up with things you would never have thought of actually playing.



Once the velocities are all equal, you can experiment by dropping some values down to 64. This way you can come up with some excellent rhythmic effects.

As you can see, with a good sequencer there are a wealth of options which enable you to create more interesting and varied effects. Don't feel that you're not being musical if you're using certain parts of the program to edit and modify what you're doing – what can be more musical than manipulating and composing entire musical arrangements? A sequencer is not the place to get precious about music you've played, but rather somewhere where you can really get to the guts of the matter and determine exactly what's right for the piece. Also, check out the sequencer's manual, for any features particular to the program which might come in handy. A feature quite often doesn't sound beneficial until you actually use it in context, and it's always worth experimenting with new ideas to see how they come out. AS

PITCH BENDING



Dr T's excellent TIGER graphic editor enables you to edit pitch bend information using the mouse.

Pitch bend provides an excellent way to improve the nuances of your music, and being able to edit them means that you can fine-tune them to suit. Obviously, guitar lines can benefit from a bit of string bend emulation, but there are other more subtle ways that instruments can benefit from pitch bend. Brass and woodwind instruments, such as trumpets and saxophones, can be made to sound a lot more realistic if you record them with a very small amount of pitch bend at either the beginning or the end of the note. At the beginning of the note, hold the pitch bend wheel slightly below the centre, and bend it up to its natural pitch quickly after hitting the note. The end of the notes should be bent down slightly. This emulates the player's natural *embouchure*, which brings the note to its correct pitch and dips out of it at the end. Experiment by editing the pitch bend – it's very difficult to get it perfect when playing it live. Whatever you do, don't quantise the pitch bend information – this makes the bend sound less smooth. Once you've got it right, save the pitch bend information to disk under its own file, called say **Brass_Bend**, so you can load it in and apply it to other notes later on.

Stacks of fun

Looking for more advanced C programming tricks? Look no further! Paul Overaa offers something for you to get your teeth into this month – dynamic resource handling.

Most Amiga programs, as you doubtless know, need to obtain various types of system resources in order to run. It might be Chip memory for graphics images, hardware like the serial or parallel port, or access to things like the timer or gameport devices. No matter what facilities are involved there is always one snag – programs need to keep track of any system facilities being used because, before they terminate, it is their responsibility to hand them back. Memory must be returned to the system, devices must be closed and so on.

Let's take a simple example. A program opening a window in a custom Intuition screen must open the Intuition library, open a screen and then open the window. Operations like these can quite easily fail – a program will not, for instance, be able to open a custom screen if some other program has already grabbed all available Chip memory. Programs must therefore not only ask for the resources they need but must check that such requests were successful. It's pretty obvious that the order in which various closedown steps are carried out is also important. In the case of the above example the program must close the window, *then* close the custom screen, and *finally* close the Intuition Library.

Coding these sort of operations in small programs rarely presents any difficulties, but as programs get to more realistic sizes many more things need to be done. Raster allocation, setting up reply ports, device access... sometimes a program may need to perform dozens of jobs before it is even up and running, and unfortunately this is just the beginning of the story. Often resources need to be allocated dynamically – that is, during the time the program is running. Consider, for example, a program which uses a number of separate windows (each with different menus). A user might activate one window and, from the associated menu, select an option which causes the printer device to be opened. Having done that the user might then have second thoughts about what they were doing, switch back to the main window, and quit the program. When terminating, the program will need some way of knowing that the printer device was open in order to close it.

Needless to say these types of considerations can obviously make life for the Amiga programmer both messy and complicated. What we really need is a scheme which can handle not only those initial program setting-up operations, but which allows additional resources to be allocated while the program is running.

LISTING 1

```
Listing 1 - Timer opening and closing routines with
stack based resource tracking.
/* ------------------------------------------- */

UBYTE OpenTimer()

{

UBYTE error_number=NO_ERROR;

if((OpenDevice(TIMERNAME,UNIT_MICROHZ,(struct ▼☛
IORequest *)g_timer_request_p,0))!=NULL)

     error_number=STARTUP_ERROR;

else {

     g_function=CloseTimer;

     PushStack(g_resource_stack_p,g_function);

     printf("timer open\n");

     }

return(error_number);

}

/* ------------------------------------------- */

void CloseTimer()

{

CloseDevice((struct IORequest *)g_timer_request_p);

printf("timer closed\n");

}

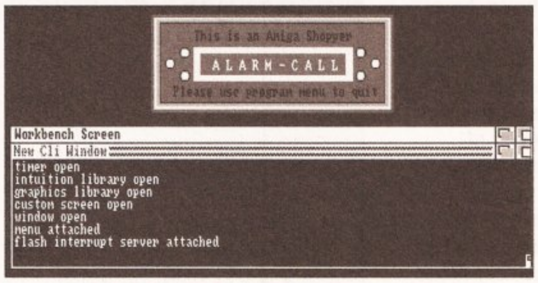
/* ------------------------------------------- */
```

DYNAMIC RESOURCE HANDLING

Dynamic what? Sounds tricky, I know, but the basic ideas and conventions of one of the schemes I've adopted are easy enough to understand. It's based on the assumption that a stack data structure is available to store pointers to any number of de-allocation routines. Stacks of course store things on a "last in, first out" basis and what my scheme effectively does is ensure that *any* routine which successfully allocates or opens some returnable or closeable system resource pushes the address of a corresponding de-allocation or closedown routine onto this stack. Routines also need to return error numbers which indicate whether they've succeeded or not.

The symbol ☛ means *do not* type a return – keep typing to the end of the next line. ▼☛ means type a space, *then* keep typing to the end of the next line.

Providing these conventions are followed the program can perform its closedown operations extremely easily. How? Just by pulling those de-allocation routine pointers from the stack and executing the corresponding routines. By the time the stack is empty all acquired system resources will have been handed back.



The CLI/Shell window will let you know what the example program is doing. Try it on the cover disk!

How do we set up the allocation / de-allocation code and get the right pieces of code executed at the right times? Let's work through a skeleton example, showing how to set up the code for a number of routine operations. Listing 1 on this page shows two routines which open and close the Timer device, while Listing 2 (on page 86) provides another example pair that create and delete a reply port. Don't worry too much about the specific details here – it is the overall layout that's important, not the actual code...

Notice that the first of each of the two pairs of routines shown in Listings 1 and 2 is using a **PushStack()** function and in each case the value being pushed – that is, stored – is the address of the corresponding de-allocation routine (the second routine in each listing). The net result is that, providing both of these allocation routines are successful, both de-allocation routine pointers will have been placed on the stack. Further allocation routines will similarly add the addresses of their closedown routines and so the stack ends up holding pointers to all of the de-allocation / closedown routines that will need to be performed when the program terminates.

The good news now is that, irrespective of the number of routines present on the resource stack, the complete de-allocation / closedown procedure can always be carried out with a single line of code:

```
while(!PopStack▼☛
        (g_resource_stack_p,▼☛
     g_function)) g_function();
```

This loop removes a pointer to a de-allocation routine and then executes

that function. It does this continually until the stack is empty. (I'll discuss my stack conventions in a moment.)

To handle the execution of the initial allocation routines used by a program, of which there are possibly a large number, another function pointer trick can be used – an array can be set up which contains pointers to the allocation routines to be executed. For example:

```
#define INITIAL_RESOURCE_COUNT 7

UBYTE (*initial_resource_list ☛
                            [])() = {
  CreateSerialReplyPort,
  CreateSerialRequestBlock,
  OpenSerialDevice,
  SetHighSpeedSerial,
  CreateTimerReplyPort,
  CreateTimerRequestBlock,
  OpenTimer
};
```

This identifies the set of routines that need to be executed at startup and of course similar types of arrays can be used at any point within a program where a number of successive allocations need to be made. All that is needed now is some loop code which will read through the pointer list and execute the corresponding routines. Listing 3 (below) shows a function which does the trick.

ABSTRACT DATA TYPES – THE EASY WAY OUT

So far I've taken it for granted that **Push/Pull** type stack operations are available to the program. The bad news of course is that if you want such stack facilities in C you must either create them yourself or borrow someone else's code. I spent no time at all on writing stack code for these experiments because an existing already compiled abstract data type (ADT) module was available to provide the stack handling facilities.

ADTs involve some interesting concepts but the basic idea is that by carefully defining the important properties of the data structure, and identifying the operations allowed, program building blocks can be created that are easily re-used. The type of operations needed with a stack data structure are of course well documented. It is necessary to be able to add and remove items from a stack and be able to kill (that is, delete) any stacks created. It is also often convenient to be able to test a stack to see if it is empty!

When I wrote my stack ADT code I had a number of specific requirements in mind. It was to be possible to use any number of different stacks handling any number of different object types, have different types of stacks in existence at different times, use the module in any number of programs without having to re-compile it and not be limited to working within a fixed memory space, save the limit of the system itself. Last but not least I wanted a module which could easily be ported to different machines. ANSI C was the obvious choice.

I opted for a linked-list dynamic memory allocation approach using **calloc()/free()** calls to provide space for the items being stored on the stack. Within the stack module the routines are based on two types of structures which represent first the list headers (stack descriptors) and second the stack items themselves. The descriptor structure for instance contains a pointer to the first item on a linked list of stack items and a value representing the size of the objects being placed on the stack:

```
struct StackDescriptor {
  struct StackItem *FirstItem;
  UBYTE  ItemSize;
};
```

Stack item structures are again relatively simple and contain just two fields: a "next item" pointer and a reference to the first byte of some unspecified data item:

```
struct StackItem {
  struct StackItem *NextItem;
  UBYTE  Data[1]; /* actually user
defined amount of data */
};
```

The underlying routines use these structures to manipulate dynamically allocated stack space. None of the code is particularly complicated but the good news is that these internal characteristics are of no consequence to the applications programs wishing to use the ADT. All that a program needs to concern itself with is the set of allowable ADT operations that have been defined. Here are interface definitions used in my ADT stack module...

s=CreateStack(t) This initialises a

LISTING 2

Listing 2 - Another set of allocation/de-allocation routines which push a de-allocation pointer onto the stack.

```
/* ———————————————————————————— */

UBYTE CreateTimerReplyPort()

{

UBYTE error_number=NO_ERROR;

if((g_timer_reply_port_p=(struct MsgPort ▼☛
               *)CreatePort(TIMERNAME,0))==NULL)

    error_number=STARTUP_ERROR;

else {

      g_function=DeleteTimerReplyPort;

      PushStack(g_resource_stack_p,g_function);

      printf("timer reply port created\n");

      }

return(error_number);

}

/* ———————————————————————————— */

void DeleteTimerReplyPort()

{

DeletePort(g_timer_reply_port_p);

printf("timer reply port deleted\n");

}

/* ———————————————————————————— */
```

LISTING 3

Listing 3: The auto-allocator function.

```
/* ———————————————————————————— */

UBYTE AllocateResource(UBYTE count,UBYTE ▼☛
                          (*list[])())

{

UBYTE i, error_number;

for (i=0;i<count;i++)

     {

       if(error_number=list[i]())

       i=count; /* force exit from loop */

     }

return(error_number);

}

/* ———————————————————————————— */
```

THE VALUE OF ADTs

Abstract data types are generally considered by computing professionals and academics to be A Good Thing.

The listings here and on the cover disk clearly demonstrate the value of abstract data types. Just as you can create functions that can be re-used in several of your programs – for instance, a Sort function – so you can create complex data types, along with associated functions to manipulate them, which can also be re-used.

The module containing these definitions can be compiled on its own, and once it is working it never needs to be compiled again. Whenever one of your own programs needs to make use of it, you just include its header file and link in its object code after the compile stage.

The beauty is you have a code module which carries out complex tasks and which you *know* will work. Also, once it's written, you need not concern yourself again with the mechanics of how it performs its tasks. You can easily make use of the stack functions given here without having the slightest inkling of how they are doing what they are doing. All you need to know are the names of the functions that manipulate the abstract data type, and the type of parameters they require.

Using stacks for resource handling is just one possibility – once you've got the hang of them you'll find them useful for all sorts of applications in your own programs.

stack suitable for storing items of type **t** specified by the applications program and returns a pointer **s** to the stack's descriptor (**NULL** if stack cannot be created).

e=PushStack(s,x) This stores item **x** on stack **s** and returns an error flag **e** that is **TRUE** if an error has occurred.

e=PopStack(s,x) This retrieves an item from stack **s** and places it in variable **x.** Errors are signified by the returned error flag **e** being **TRUE.**

KillStack(s) This unloads and then deletes the stack **s.** No return value.

f=StackEmpty(s) This tests stack **s** to see if it is empty and returns a flag **f** as **TRUE** if there are no items on the stack.

These calls are macros designed to create a more straightforward interface to the ADT, and the definitions are held in a header file that is included by applications programs requiring the stack ADT facilities (Listing 4, on this page, gives the details present in the stack header file). To use the routines in any applications program a user just includes the header file **(stack_adt.h)** into the program source, compiles as normal, but links additionally with the ADT stack object code module **(stack_adt.o).**

LISTING 4

```
Listing 4: The stack ADT header file.

/*==================================================
======================== */
/* Source:                Stack ADT header         */
/* ---------------------------------------------- */

typedef void STACK;

/* These macros are used to create a slightly more
friendly interface to the user. They just remove
the need for explicit sizeof(), casting and address
taking operations in the applications code... */

#define CreateStack(t) CreateStk(sizeof(t))

#define PushStack(s,x) PushStk(s,(UBYTE *)&(x))

#define PopStack(s,x)  PopStk(s,(UBYTE *)&(x))
#define KillStack(s)   KillStk(s)

#define StackEmpty(s)  StkEmpty(s)

/* These are the prototypes for the underlying
stack access routines which do the real work... */

STACK   *CreateStk(ULONG unit_size);

void    KillStk(STACK *descriptor_p);

BOOL    PushStk(STACK *descriptor_p, UBYTE
*data_item);

BOOL    PopStk(STACK *descriptor_p, UBYTE
*data_item);

BOOL    StackEmpty(STACK *descriptor_p);
/* ---------------------------------------------- */
```

AN EXAMPLE PROGRAM IN ACTION

This month's cover disk contains all of the source code and header files for an "alarm program" which uses the timer device to provide some user-specified delay. During this time the program sleeps but as soon as the appropriate time interval has elapsed it wakes up, opens the Intuition and graphics libraries, opens a window in a custom screen, sets up an interrupt server to create some flashing colours, and displays a message.

How does the program work? Well, the bulk of the code relates to the resource handling scheme I've discussed and, although the program is still quite small (as Amiga programs go), quite a lot of allocation / de-allocation operations get carried out (18 in all).

Here's a general plan of the various stages that occur:

1: Timer reply port is created
2: Timer request block is created.
3: Timer device is opened.

When time delay is complete...
4: Intuition library is opened.
5: Graphics library is opened.
6: Custom screen is created.
7: Window opened in custom screen.
8: Menu added to window.
9: Flashing colour interrupt server installed.

When the user selects Quit from the menu the program then...
10: Removes the interrupt server.
11: Removes the menu.
12 Closes the window.
13: Closes the custom screen.
14: Closes the graphics library.
15: Closes the Intuition library.
16: Closes the timer device.
17: Deletes the timer request block, and finally...
18: Deletes the timer reply port.

All of these operations have been performed using the techniques we've discussed this month. And all of the relative source code, object code, header files etc., plus a runnable version of the test program, have been provided on the cover disk. Here are some brief details of the files you'll find. For general details about the disk, see page 12.

general.h A general header file required for both the **alarm.c** and **display.c** modules.

alarm.h A header file which contains includes and defines, function prototypes, and globals related to the **alarm.c** module.

alarm.c This is the main core of the program. It sets up a stack and performs a series of timer-device-related allocations before issuing the appropriate **DoIO()** time delay call. When the time interval is up a **Display()** routine is called, after which the program deallocates its resources and terminates.

alarm.o Compiled object code form of the **alarm.c** file

alarm.lnk Link file for the **alarm.o, display.o** and **stack_adt.o** code modules.

alarm The CLI/Shell runnable form of the example.

display.h A header file which contains includes and defines, function prototypes, and globals related to the **display.c** module.

display.c This contains the **Display()** function which opens the Intuition and graphics libraries, opens a custom screen, opens a window, installs a menu and puts up the "time up" display.

display.o Compiled object code form of the **display.c** file.

stack_adt.h The header needed by **test.c** and **display.c** in order to use ADT stack operations.

stack_adt.o Object code for the stack ADT module.

alarmimage.c Source code for the alarm message image structure.

alarmimage.o Object code for the above file.

interrupt.o An object code module that contains a couple of routines, written in 68000 assembler, which alternate the contents of colour register 4 in order to create a flashing effect.

The program, which was compiled using SAS C, should be run from a CLI/Shell window. The reason for this is that **printf()** statements have been included in all of the allocation / de-allocation routines in order to provide some visible indication of the routines being executed.

To run the example just open a CLI/Shell window, copy the program to the RAM disk and make **RAM:** the current directory (using the **CD RAM:** command), and then type this:

```
1> alarm x
```

Or, if you want to kick off the program as a separate process (so that you can continue to use the CLI/Shell window for other things), type this instead:

```
1> run alarm x
```

where *x* is some integer time delay expressed in minutes. After *x* minutes you'll get an alarm call message displayed and at this point the program can be cancelled from the menu. AS

JARGON BUSTING

Function Pointer – C Pointers usually hold the addresses of other variables but they can also be used to store the addresses of executable C routines. In this latter case they are called "function pointers".

Interrupt Server – One of any number of routines that are linked to a particular hardware interrupt. In the case of this month's example program the Amiga's vertical blanking interrupt chain is being used.

Linked-list – A series of items in memory that are logically chained together by including within each item a pointer to the next item.

Pull or **Pop** – Common terms for removing an item from a stack.

Push – A common term for placing an item on a stack.

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NORTHEAST

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Amiga Utd Disk based, reviews, competitions, help service, BBS, games and utils. Contact D Collingwood, 14 Linden Close, Hutton Rudley, Yarm, Cleveland TS15 0HX. £10 a year. (AS33)

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Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire DL9 3HE. (AS33)

Chester-le-Street 16-Bit Computer Club Exchange advice and swap tips. Meets Mondays from 7.30–9.30pm, Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Contact Peter Mears ☎ 091 385 2939. (AS33)

Club 68000 Comp's, progg'ing, music. Meets Harrogate Leisure Centre, Mondays 6.15pm–10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks HG3 1EJ ☎ 0423 891910. (AS33)

Club Amiga £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear. (AS33)

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Pennine Amiga Club Free membership, free advice and a newsletter. Contact Neville Armstrong, 26 Spencer Street, Keighley, West Yorkshire BD21 2BU ☎ 0535 609263. (AS33)

Software City Swapping, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollis Close, Manor Estate Farm, Rawmarsh, Rotherham, South Yorkshire S62 7LX ☎ 0709 526092. (AS33)

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The Amiga Club Monthly newsletter, competitions, software exchange, huge PD library, cheats, tips, reviews. Contact G Starling, 31 Pine Lea, Brandon, Durham DH7 8SR. Membership £10 life plus two free games and DCopy. (AS33)

The Amiga Studio Friendly, helpful advice for serious Amiga users. Monthly newsletter, PD library, free loan of equipment to members, bar. Meets 7pm Tuesdays, Mitchells Club, Scotia Road, Tunstall. Contact Dave Rose ☎ 0782 815589. (AS33)

Wardray Hern Consortium User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection – worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX. (AS33)

Warpdrive Help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 per year. Contact B Scales, 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715. (AS33)

NORTHWEST

Allbit Computer Club General hints and tips, advice, competitions, draws, shop. Meet at The Earle of Crewe, 7.15–10.30pm. Contact Glyn or Mick, 0270 666277. Membership £2. (AS33)

Amiga Users Group Part 2 Advice, technical support, BBS, PD library, tuition, etc. Contact Andy Wilkinson, 25 Glen Eldon Road, Lytham St Annes, Lancashire FY8 2AX ☎ 0253 724607. Free membership. (AS33)

Blackburn Amiga Users Group Software/hardware help, public domain, exchange of information. Meets 7.15pm every Thursday, Room 3, Audley Sports Centre. Contact Eric Hayes, 9 Observatory Road, Blackburn, Lancashire BB2 3HE ☎ 0254 675625. (AS38)

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Fylde Computer Club All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502. (AS33)

Hyndburn Amiga Users Club Tuition, advice, PD, and more. Meets Mondays 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289. (AS33)

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OVERSEAS

16-32 Micro Programming AMOS, bimonthly fanzine, PD (Fish → 590). Membership 100FF or £10. Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France ☎ 315220 02. (AS33)

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AMOS Users join The MR AMOS Club, winnersof Europress Software's AMOS programming comp. Send £2.50 for issue one of disk mag. Contact Brian Bell, 8 Magnolia Park, Dunmurry, Belfast BT17 0DS. (AS35)

AUGFL vzw Bi-monthly newsletter, PD, distribution & support of Belgian programs, registration-site, tips. 750 Bfr/year membership. Contact Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium. (AS33)

City Centre Amiga Group All-round user group, esp. PD, DTP, help for new users. Meet Ormond Hotel, 2–6pm. Contact Patrick Chapman, 70 Ballygall Crescent, Finglas East, Dublin II, Ireland, ☎ 345035. Membership £3 per week. (AS33)

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library. Membership A$24. Comp-U-Pal, 116 Macarthur Street, Sale, Victoria 3850, Australia. (AS33)

CUGI Commodore Users Group of Ireland Quarterly newsletter, demos, PD, BBS, discounts. Meet 8pm Friday fortnightly, St Andrew's College. Contact Geoffrey Reeves, c/o St Andrew's College, Booterstown Avenue, Blackrock, Co Dublin. ☎ +353 1 288 3863. Membership £15. Assoc., family & BBS membership also. (AS38)

Danish AMOS user group Bimonthly disk mag, £2 each, PD library. SAE for info. Contact Tom Poulsen, Stenmøllen 28, 2640 Hedehúsene, DK Denmark ☎ 42 16 54 84. (AS33)

Gibraltar Amiga Users Club PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918. (AS33)

HTS (Malta) Free membership. Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023. (AS33)

Japan Amiga Group Share disks and make Japanese contacts. Contact: Rick Gardaya, PSC 78 Box 3876, APO AP 96326 USA. (AS35)

Malta Amiga Club Contact Zappor, PO Box 39, St Julians, Malta, ☎ 440453 (AS33)

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447. (AS33)

Navan Computer Club Software reviewing, graphics, business, news and chat. Meet various hotels in Navan, 7.30–9pm. Contact Mark Arnold, Cannistown, Navan, Co Meath, Eire ☎ 046 21078. Membership £6 per year. (AS33)

N Ireland Amiga User Free PD, disk-based mag £2.50 per issue. SAE to Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS. (AS33)

Northside Amiga Group Lectures by professionals on different Amigas and associated hardware. Member demonstrations on serious software and games. Meets 8pm alternate Mondays, Donamede House, Dublin 13. Contact William Kelling, 10/A Rainsford Avenue, Dublin 8, Ireland ☎ 01 532 807. (AS33)

Royal Air Force Amiga Club Loads of new PD. Meets 1900-2000 hours, Thursdays, Blk 35, Room 40. Send 10 of your PD disks plus 2 x 24p stamps to Stan Young, HMF RAF Laarbruch, BFPO 43 ☎ 445. (AS33)

Singapore Sling Promotes Amiga in Singapore. Meet Eugenia Court, every Sunday 1pm. Contact Eric Chai ML, Block 4 #14-413, Pandan Valley, Singapore 2159, ☎ 65 4680630. Membership free. (AS33)

Software Exchange Club Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, Co. Wexford, Republic of Ireland. (AS38)

Worldwide PD Club Over 4,100 disks – send 2 formatted disks and stamped, addressed jiffy bag for catalogue. Membership DM60 a year or DM6 a month. Contact Dave White, Berliner Strasse 39, 40880 Ratingen, Germany ☎ 02102 499729 (Germany). (AS38)

Next month in AS33: Scotland, Wales, special interests, BBSs

Note: this list is provided as a free service for amateur, non-profit-making user groups. *Amiga Shopper* does not endorse or recommend any particular group and cannot be held responsible for any losses or problems you might suffer.

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Your user group will be listed here free of charge for six months, then deleted to prevent defunct groups being listed indefinitely. The number at the end of each entry is the last issue in which that entry will be included. If you want your group's entry left in, just send in this coupon again a couple of issues in advance. PD libraries are now listed at the end of the PD section – this issue, page 120.

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

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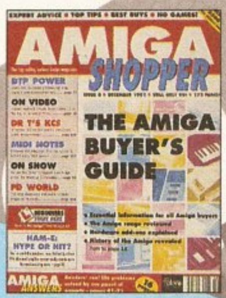
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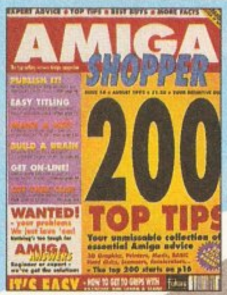
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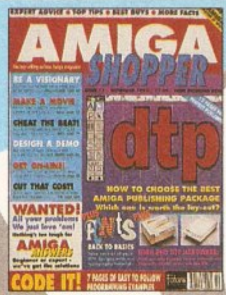
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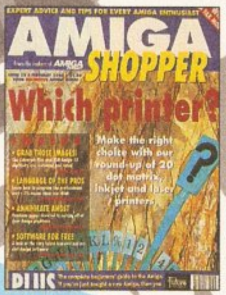
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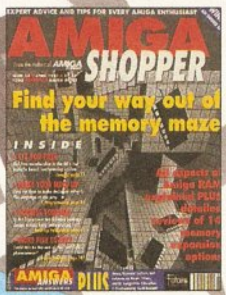
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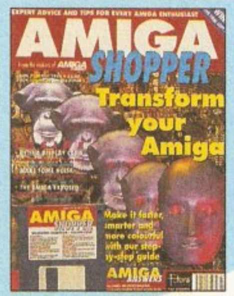
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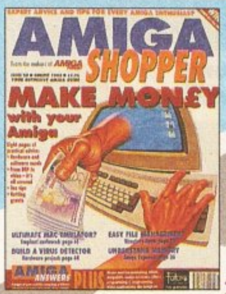
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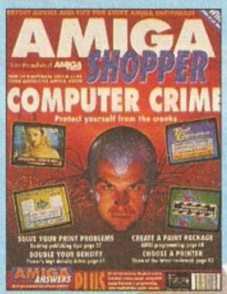
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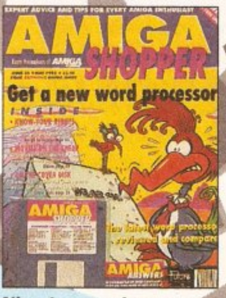
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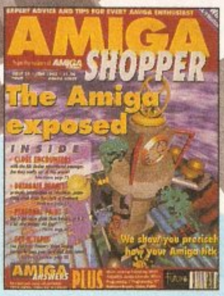
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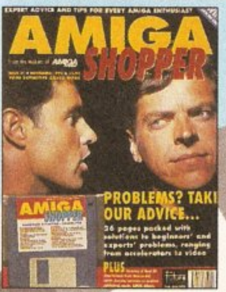
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Getting

This month, for those who aren't wired up yet, Dave Winder takes you on an introductory tour of the wonderful world of comms.

Comms, or, to give it its full title, "telecommunications", is simply a matter of computer-to-computer communication using the phone. Many people who have no experience of comms often mistakenly think that it is all about hacking, breaking into secret defence systems or stealing vast quantities of cash from an unsuspecting bank. Sorry, folks, but that ain't it! Comms is about the transfer of information. That information can be simple chat, electronic mail, public domain programs, in-depth conferencing and so on. There are free-access databases which hold an amazing amount of information, on every subject under the sun, which you can tap into – it's all much easier than going to the library, and possibly just as much fun.

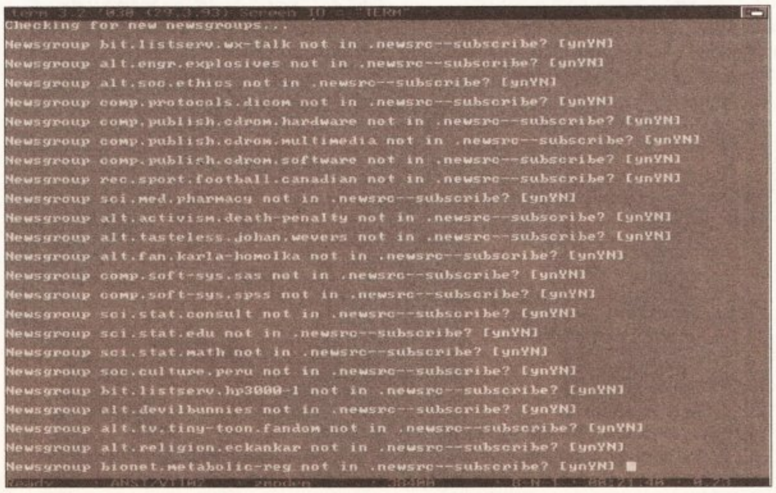
To get started in this fascinating field you will need a certain amount of equipment (I'll hazard a guess that you will probably have sorted out an Amiga by now). First you need something to allow your Amiga to communicate via the telephone line, and a modem is just the ticket. A modem, or MOdulator/DEModulator, plugs into the serial port of your Amiga and converts digital information into an analog signal that is usable over the telephone line. (It needs to be converted because computers talk in binary – 0's and 1's – digital information which a telephone line cannot handle.) The modem is attached to the telephone socket and sends this digital information over the line to another modem attached to another computer. The modem at the other end converts the analog signal back into a digital one that the receiving computer deals with.

> *"You may well find that you become hooked on the social side of the hobby"*

Always try to buy the fastest modem you can afford – it can be a false economy to do otherwise. The faster you can transfer the information, the less time you will spend on-line, and so the less money you will be giving British Telecom. These days you can pick up a very fast modem for a lot less than I once paid for a snail which had been painted black with a few flashing red lights stuck up its nose.

TERM TIME

So you have your computer and you have a modem. Next you need to



Interested in statistics, explosives, Peru or Karla Homolka (whoever she may be)? With a modem, these are just a few of the discussion groups you can join.

connected

provide an easy method of getting the two talking to each other. This is accomplished by what is called terminal software. This software enables your Amiga to communicate with your modem in the correct way, and is customisable to make life as easy as possible. We in the Amiga community are fortunate that, without exception, all the best terminal software is in the public domain – that is, virtually free. A number of commercial programs have appeared over the years but they have never really cut the mustard. (I'm not surprised – have you ever tried cutting mustard? It's bloody difficult you know.) This can be put down to the fact that the comms world is populated by an incredible bunch of enthusiasts. The people who write the best comms programs are doing it out of love of the hobby, not to make a fortune. This means that they also tend to offer genuine support and update programs whenever they have to.

The terminal software aspect has long been an area that has put people off trying comms, mistakenly thinking it is going to be a nightmare of configuration and anorak-speak. Wrong! Nowadays terminal programs are as easy to use as something that is very easy to use indeed.

My personal choice, and the choice of many enthusiasts, is *Term*. This program is in the public domain and can be got from any decent Bulletin Board (BBS). If you don't know anyone who has access to a BBS, you can purchase the latest version from any of the better PD Libraries (see the directory on page 120 of this issue). *Term* requires Workbench 2.04 or above, but you really shouldn't still be using Wb 1.3, you know. Providing you read *Term's* extensive documentation *before* just getting stuck in there, you should have no trouble in setting up the software to take best advantage of your equipment and needs. *Term* is one of the most flexible of these terminal programs – that's the reason I use it – and this flexibility is really required because of the vast number of modems and protocols and systems out there.

The phonebook feature of *Term* particularly deserves a mention because it is so comprehensive. Each entry has its own configuration so that you don't have to change system defaults when dialling different systems. *Term* implements the ZModem protocol better than any other program I have tried, and this can be very important. *Term* will even speak to you using its speech facility, which may sound like a gimmick but I like to be able to hear the computer telling me a download is completed so I can hop out of the bath and save a large phone bill. (Just don't ask what I'm doing in the bath while on-line....)

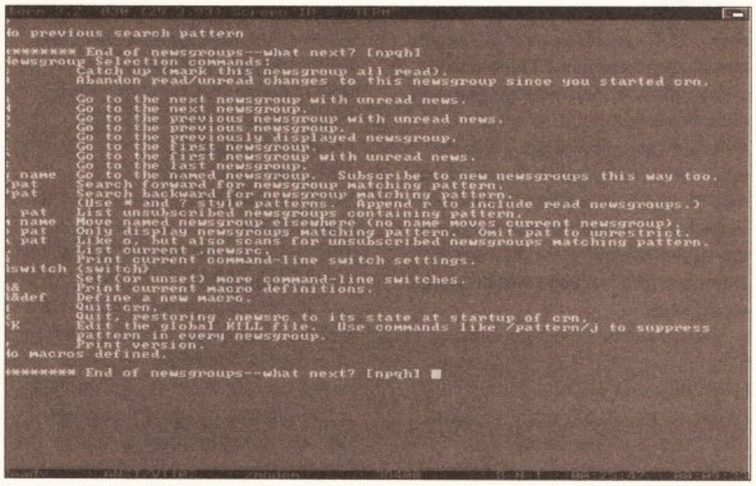
ALL ABOARD

All we need now is somewhere to call to try it all out. The place to call is known as a Bulletin Board System or BBS for short. A BBS is quite simply an electronic version of the noticeboards you find in all sorts of places. People can leave a note pinned to the board, and anyone who wanders past can read it and leave a reply. That's how it works, simply, but of course there is much more to it than that. Access to your message can be restricted, depending on the area to which you are posting it. You can send electronic mail (or EMail for short), which is totally confidential and can only be read by the person you are sending to.

As well as messages, most BBSs have large file areas. This is where a pool of public domain software sits for the benefit of members of the BBS. To gain access to this vast quantity of software you will need to let the System Operator or SysOp know you are new to comms and he will usually adjust your upload to download ratio accordingly. These ratios restrict the amount of software you can download according to how much you have uploaded to the system – nobody likes a freeloader, after all. Many BBSs will abolish these ratios for you if you subscribe to the system – that is, pay a small annual fee which helps them offset the costs of actually running the Bulletin Board. SysOps usually operate out of love, not for financial reasons, and it can end up being an expensive affair – believe me, I know.

Watch out in these very pages (and, of course on other Bulletin Boards) for recommendations of BBSs to call – a couple of good ones are 01 For Amiga (☎ 071 377 1358) and the Cheam Amiga Bulletin Board (☎ 081 644 8714). Once you've got your number, you are probably a bit apprehensive about how you go about calling for the first time. Worry not, for Wavey is here.

Type the command **AT** to make sure that your terminal software, modem and computer are all talking to each other. This should get a reply of OK if everything is fabby doo. If it doesn't work, try making sure that your modem is switched on....



Looks complicated? Well, don't worry – with Amiga Shopper here to help, you'll soon be browsing like a native through gigabytes of on-line data.

Now select the serial preferences menu and ensure that you have the following options set – they will get you connected okay to most BBSs out there:

Bits = Eight
Parity = None
Stop Bits = One
Handshaking = RTS/CTS

Make sure you have entered the number of the BBS you want to call into the phonebook section of your software, and then hit the **Dial** button. When the modem at the other end answers you'll hear a few odd bleeps and whistles, and then you should get a message on screen saying something along the lines of "connected". At this point press the <Return> key to get things moving, and then press the <Escape> key a couple of times to start the software off at the other end (this will usually start anyway after 20 seconds or so, but why waste time?). Providing all is well, you should be greeted by a welcome message which will prompt you to enter your name. Do this and it will tell you it doesn't know you and ask if you are a new user. Respond in the positive (say yes, bozo) and you will then be asked to complete a questionnaire. The BBS needs to know these things in order to protect itself – it is only fair they know who is using their system, so be honest about your answers.

The BBS will want your real name, address, telephone number and also some information about the computer and equipment you are using so as to enable you get the best out of the system. If some of the questions are of a technical nature which means that you don't understand them fully, just press <Return> – this will give you the system default, which will work nine times out of ten anyway.

Once accepted as a new member of the BBS, drop the SysOp a line to say hello, and also to thank him for allowing you to use his system. After all, it is only polite. Oh, and don't worry about SysOps: they might be God on their BBSs but they are usually pretty nice people....

CIX KICKS

Once you have tried a few BBSs you may well find that you become hooked on the social side of the hobby, the talking to people, making friends, gaining knowledge, etc. etc. If so, you may well want to try the UK's largest conferencing system, CIX. The Compulink Information eXchange differs from the standard BBSs in that it is a commercial system which costs money to use, but there are many benefits to be gained. The emphasis on CIX is on conferencing – talking about specific subjects in open or closed conferences, to many thousands of subscribers. There is a real wealth of knowledge on CIX, not least from the many *Amiga Shopper* writers who inhabit the system – there is even an **amigashopper** conference where you can talk directly to us, and about us.

And don't forget the **amiga** conference, which is one of the busiest on the system. For more information about CIX just check out *Amiga Shopper* 24 (back issues are available – see page 90) or call them on ☎ 081 390 8446. AS

Is anybody there?

What can you do if you need to transfer data between your Amiga and some other machine? Wilf Rees can tell you the secret – he spends hours talking to other computers, which occasionally even answer back...

The symbol ☛ means do not type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.

Amiga users know that their computer is capable of very sophisticated tasks and can out-perform most machines in many areas. In some fields however a particular application on a different machine might have the edge and, vanity aside, it would be nice if we could capitalise on such facilities. And then of course there are times when you might need to swap information between different machines.

Since the birth of the home computer, different developers have taken different paths and tried different new ideas, with the result that there is a cacophony of incompatible designs, operating systems and file formats out there. Even the so-called "standard" PC format is a myth, as you'll know if you bought a "PC-compatible" Tandy or Sony machine in the '80s. But fear not – help is at hand.

FILE FORMATS

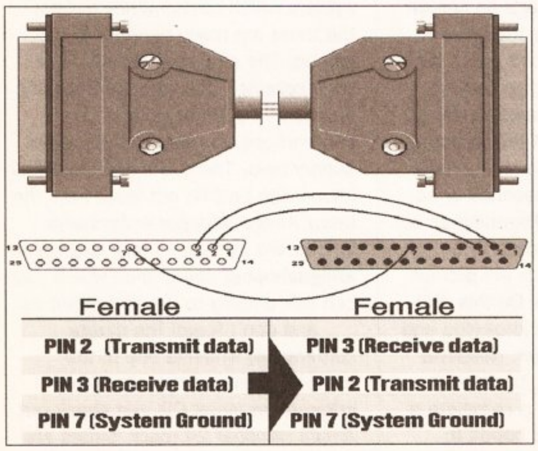
The initial barrier to break down between computers is to make sure that the recipient machine understands the information fed to it. Different computers often require different file formats for information. Amigas generally use the IFF format for pictures, as detailed in *Amiga Shopper* 29 (and if you missed that issue, you can order a copy on page 58), but PCs have a multitude of picture formats – more than can be counted on fingers and toes together! Here are some of the common ones, listed by extension or abbreviation:

BMP: OS/2 Bitmap file (also used for Windows paintbrush)
GIF: Graphics Interchange Format
LBM: *Deluxe Paint II* and *DPII*-enhanced on the PC
MSP: Microsoft *Paint*
PCX: PC PaintBrush file
TGA: TARGA
TIFF: Widely-used picture format on most computers.

There are also many other file formats, but nearly all others are application-dependent. And that's not the end of it either. For example, a TIFF file has to specify whether LZW compression is in operation and if Motorola or Intel specification is selected, depending on what computer is reading the file. Considering there are hundreds of different formats for text or word processor documents and many more for sound samples, life can turn out to be very confusing.

Because of the multitude of formats, transporting data from one computer to another requires translation. There are a few ways that this can be done. First, you have more than one world of software to explore, because the data does not necessarily have to be converted at source. There are quite a few programs on the PC that will convert the files listed above from Amiga recognised formats.

On the Amiga side there are numerous programs for converting files from one format to another. *Art Department* and *Art Department Professional* are extremely useful for converting picture files because the list of formats is modular – that is, new formats to convert from can be added as needed, providing they are available.



For a lead, use two 25-way, D-type female connectors and three-core shielded cabling (not over 3 metres).

If your budget is not so large, then 17-bit Software (☎ 0924 366982) supply a pack of file converters. The pack includes picture converters for converting from IFF to formats such as GIF, TIFF, TARGA, *Degas* (all resolutions), *Neochrome, MacPaint,* PostScript and a few others. One program included on the disk will convert Amiga Anim files to *AniMagic, Animation Station, Director/Movie2.0* and *Animation Editor.* One of the most useful features on the disk is the inclusion of *Graphics Workshop 4.6,* which runs on a PC. This program features conversion between *MacPaint,* GEM/IMG, PCX, GIF, TIFF, PostScript, WPG *(WordPerfect),* MSP, IFF, BMP and PIC *(PC Paint).* Facilities are included for scaling, viewing, dithering, reversing, flipping, rotating and printing. *Graphics Workshop* is a first-rate program with excellent features. The disk, entitled "Converters Pack", is in effect a fully working workstation for converting files and transporting them to a PC. The *MessyDOS* utility is included with this disk – it enables Amigas to read 720K PC disks so that any transferring can take place.

A second disk in the set is a program called *Grinder,* which claims to convert between Atari ST, PCX, TIFF, Targa, JPEG, GIF and HAM-E but fails to do any of this – most often it just crashes. It looks suspiciously as if it is just a *CanDo* program addressing external software rather poorly.

Converting DTP files can be quite simple because there are only a few standards for text files. Perhaps the most common for structured drawing is Encapsulated PostScript (EPS). *Pro Page, PageStream* and *Saxon Publisher* all support this output format, along with structured drawing programs including *Pro Draw, Art Expression* and *Expert Draw.* Unfortunately EPS is not a rigid standard, so make sure that each program's version of it is compatible.

WP FILE CONVERSION

Virtually every word processor can import or at least read plain vanilla text in ASCII format, once you've managed to get your Amiga to read another machine's disk. The problem with ASCII however is that it doesn't include formatting or command characters – italics, large display text, and so on. But conversion between word processors is also possible. This facility is usually incorporated into higher-priced packages. Conversions are available for "giant" word processors on the PC, such as *WordPerfect, Microsoft Word* and *WordStar.* Details of the common Amiga word processors which support conversion between documents are shown below.

- **WordWorth v2** – ASCII (Amiga/PC), ProWrite, WordPerfect (Amiga), RTF (Rich Text Format), WordPerfect 5.1 (MS-DOS), IFF Text (Kindwords), Microsoft Word (MS-DOS), Protext, Microsoft Windows Write (MS-DOS).
- **Final Copy IIb** – ASCII (Amiga/PC) + others when available – *Final Copy IIb* supports file converters in a modular format, so you can add new converters as they are needed.
- **Excellence v3** – ASCII
- **Pen Pal** – ASCII

Unfortunately, document conversion is not always a reliable feature because PC word processors are constantly being updated, leaving previous formats incompatible.

DOS EMULATORS

Software has, for a long time, been available for emulating another computer's filing system. One that many people have encountered is *CrossDOS* – it is being supplied with Workbench 2.1 and 3.0. This enables your Amiga to read and write 720K PC-formatted disks as if they were any old Amiga disk. This feature is very useful, because it enables you to use your favourite directory utility, such as *SID* or *Directory Opus,* to handle the files being transferred. *CrossDOS* only has one minor fault: it will not successfully format disks containing slight media defects. PCs map out faulty areas of any disk during the formatting process, defining them as "Bad Blocks", and avoid using them.

If you are transferring very big files, a set of two programs supplied with ADSG's *Art Department Professional* called *Splitz* and *Joinz* will help. *Splitz* can spread a file over as many disks as it will take, and *Joinz* then re-assembles the file on

LISTING 1: AREXX TRANSMIT SCRIPT

The first of our two ARexx programs deals with transmitting files.

```
  /* transmit file script*/

  say "Input Name of file to be transmitted"

  pull Tran_file

address Command

/* Check size of file for transfer */

  'list >t:file.data' tran_file ▼☛
   'lformat="%l*n%s"'

address rexx

open('filespec','t:file.data','R')

/* This section creates a protocol for
transmitting. All file details are needed for
inclusion into the header block */

  file_data=readln('filespec')

  file_name=readln('filespec')

  say "length="file_data

/* The "+" character is used for padding out
the blank areas. The filenames and file
lengths are overlaid onto the pad. */

protocol1=overlay(file_name,☛
'++++++++++++++++')
protocol2=overlay(file_data,☛
'++++++++++++++++')

protocol=insert(protocol2,protocol1,16)

/* The source file is now opened, with the
"R" option, meaning to read data from it. */

err1=open('input',tran_file,R)

/* The ser: device is also opened this time,
for writing. The ser: device communicates
with the serial port. */

err1=open('output','ser:',w)

if err1>1 then exit

say "transmitting..."

/* The protocol "header" is written at this
point */

   writech('output',protocol)

   character=readch('input',file_data)

/* And now, the entire file is read character
by character and written to the "output"
file, which in this case is the Aux: device
*/

   writech('output',character)
```

the destination computer's hard disk. PC, Apple Macintosh and Amiga versions of these programs all come in the same bundle.

A shareware alternative to *CrossDOS* is *MessyDOS;* it includes most of the basic functions of *CrossDOS,* such as formatting disks, but unlike *CrossDOS* it is compatible with earlier versions of Workbench. Otherwise, which you choose to use is down to which name you prefer.

Reading Apple Mac disks can be far more difficult than PC disks. 800K Mac disks work by changing the revolution speed of the drive towards the centre, resulting in the information being spaced apart equally over the disk. Amiga disk drives revolve at the same speed all the time. You can buy the appropriate hardware, but it is extremely expensive. If you need to transfer data between Mac and Amiga, just use PC disks – Macs can read these using a program called *Apple File Exchange,* which now comes as standard with new Macs.

Software is available to read Atari ST disks. A PD program called *AtariRead* will copy files to and from Atari ST disks. This is available from most PD houses. And all but the oldest STs can also read PC disks.

If you are lucky enough to own an emulator, then swapping of files is usually facilitated via a transfer program included with the package. With the Commodore PC bridgeboards, two programs called *AWRITE* and *AREAD* will enable AmigaDOS drives to be read or written to. This means of transfer is usually the fastest.

DIRECT TRANSFER

If you find transferring by disk to another computer tedious and cumbersome, the alternative is to transfer files directly. Enter the world of comms!

Communicating with another computer requires you to buy or make a special cable (see the diagram on page 94). Alternatively, a modem could be used if the distance between the two computers is too great for a cable. If you decide to construct a cable, remember, the higher quality cable you use, the greater rates of transfer you will be able to achieve, error-free. Proper interference shielding is also helpful for prevention of errors.

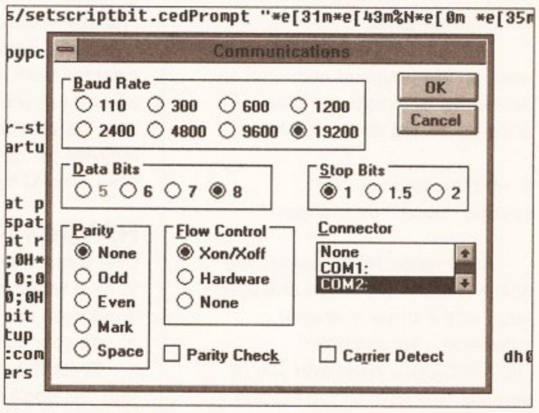
On the Amiga side, there are quite a few different software comms packages to choose from, most of them being PD or shareware. Perhaps one of the best ones around is *NComm. NComm* supports most types of file transfer methods, up to the highest Baud Rates the Amiga will support. Although *NComm* is normally used for accessing Bulletin Boards and the like it is an effective means for file transfer.

On the PC side, *Terminal,* supplied with Windows, will happily talk to the Amiga and transfer files successfully (see the picture above).

WHAT TO DO

First connect the two computers together, via their serial ports. Load the appropriate communications software into both machines. You will need to specify identical communications setups on both machines – for example, 19200 Baud, 8 Data Bits, Parity:none, Flow control/Hand Shaking: Xon/Xoff and 1 Stop bit.

Once you have established a link between the two computers, try typing something into one comms program. What you type should appear on the other computer's screen. Test out the <Return> and <Backspace> keys. If the <Return> key on the PC seems to send the cursor on the Amiga back to the start of the current line and not to the start of a new line, then you will need to set the PC software to translate Carriage Returns to Carriage Returns + line feeds (CR -> CR/LF option, inbound and outbound on Windows terminal). On the Amiga, you will need to select an appropriate protocol for transfer of files. *Terminal* on the PC gives you a choice of Xmodem or Kermit. Either can be used as long as both computers use the same. The protocol type can be set from the **Transfer** menu on *NComm* and from the **Communications** menu on *Windows Terminal.* Once all this is set up, your computers are ready to exchange files.



The Communications Setup window on Windows Terminal enables you to set interfacing attributes such as Baud Rate, flow control, stop bits and so on.

To transfer a file from the Amiga to the PC, select **"receive file"** from the **transfer** menu of *Windows Terminal.* A requester should appear for you to give the transferred file a name. Enter a suitable name, and the PC will await the transfer process. On *NComm,* choose **"Upload"** from the **Transfer** menu. A file requester will appear asking you which file to send. Once you have selected a file, the transfer will commence. The time taken will depend on the size of the file and the Baud rate selected.

ARCHIVE EFFICIENCY

Throughout all bulletin boards, programs (or groups of files) are stored and transferred in an archived format – compressed to minimise on space. When transferring groups of files from one computer to another, perhaps the most convenient method is to archive them on the source computer and de-archive them on the destination computer, so that in effect you are only copying one file. Take note, the archiver you use on the Amiga side has to have a counterpart on the PC side and vice versa. Use a popular archiver, such as *LhArc* or *LhA.* Both of these are available on the PC and Amiga. I used *LhA* version 1.38 and *LhArc* version 1.30 and they were both compatible with *LhA* version 2.13 and *LhArc* version 1.00 on the PC.

To build an archive, you will have to have some background knowledge of AmigaDOS's Shell or MS-DOS on the PC. Creating an archive is identical on either computer. For simplicity, I'll assume you're using *LhArc.* This example shows how to archive a set of files in the **dh0:graphics/** drawer that all contain the word "demo" as part of their filename. The archive name will be **Ram:demos.lzh.**

```
1> lharc a dh0:graphics/☛
#?demo#? ram:demos.lzh
```

JARGON BUSTING

ANSI – American National Standards Institute. A file format identical to ASCII except that it can include command characters.

Archiver – A program which groups together a number of files and usually compresses them to reduce the space they take to store and the time taken when transferring via modem.

ASCII – American Standard Code for Information Interchange. This is a file format for plain text that is universally accepted as a means of communication.

Baud rate – The rate at which data is sent by a bitstream method, measured in bits per second.

Modem – Modulator/De-modulator. A device that plugs into a computer's serial port and enables it to send information across a telephone line.

Null modem – A type of cable that can link two computers in close proximity via serial ports. It is as if they were connected via modem, except the data transfer rates (baud rates) can be far higher.

Protocol – The method used by a comms program to communicate with the remote computer. This will include information such as the size and name of the file. Protocols often implement error-checking algorithms to ensure data integrity is not lost. Common protocol types include XModem, YModem, ZModem and Kermit

Serial Port – This port on the back of your Amiga sends information out by a bitstream method (a constant on/off signal flow), but one bit after another, rather than several at a time as the parallel port does when you are printing, for example, so this method is slower.

The "**a**" option tells *LhArc* to archive the files given by the **#?demo#?** wildcards. Similarly you could replace the "**a**" option with an "**x**", making *LhArc* extract any files under the wildcard **bigdemo.***

The following example would be used on the recipient computer to de-archive or extract the files archived on the donor machine.

```
C:\UTILS> lharc x ▼☛
c:\temp\demos.lzh bigdemo.*
```

Remember: PC filenames are only a maximum of eight characters long, with a three character extension – for example DATAFILE.DOC. Whenever you're sending files over to the PC, the filenames will be truncated at the 11 character point, so an Amiga file called **Loads_of_pictures_1** would become **LOADS_OF._PI** on the PC. You can imagine what would happen if this file was being transferred alongside an Amiga file called **Loads_of_pictures_2.**

If you own a PC emulator which supports use of the serial port, then *LapLink* will swap files between your emulator and another desktop PC. Transfer rates can be exceptionally high if you decide to use the parallel transfer method, or up to 115,200 baud if you are using serial. On test with the parallel option, it took 40 minutes to transfer 150Mb of data from one PC hard disk to another.

HAVING FUN

Ever fancied another computer linked in as a terminal on your Amiga? Would you like two people to be able to use your computer at one time?

Enter the following commands into the Shell window of the host computer.

```
Newshell aux:
```

The other computer's comms software then needs setting up to be in terminal mode, preferably in ANSI format. Now you can use any Shell or CLI command from the remote computer as if you were typing into the host computer! It is even possible to have two-way communications with this method, as long as both computers are Amigas. Simply type **Newshell aux:** into the other computer's Shell window and hey presto! You've got two machines doubling up as four!

DOING IT YOURSELF

For getting the job done, comms programs can be very useful, but you can also do it yourself. Here's how to use ARexx to help communicate with a remote computer. For simplicity, I'll assume that the remote computer is an Amiga or PC with OS/2 running Rexx, since Rexx is not available for MS-DOS. If you are running Rexx on OS/2 then you will need to change certain parts of the program to fit the OS/2 environment – for example, when addressing the host environment, the list command would not be available; its equivalent would be needed. The programs in Listings 1 and 2 demonstrate the use of protocols for transferring information. Protocols determine the way in which the information is to be transferred. The method used here is a very simple one. Normally, protocols will deal with things such as error correction, but the ones here just send a header of information about the file that is being sent.

The header protocol block that was generated should appear as a file name and file size overlaying a pad of "+" signs. The data being sent as part of the file continues after the 32nd character. Here is an example:

```
Filename.txt++++23502++++++++ ☛
+++(data continues from here...)
```

Protocols used in comms programs are a great deal more complex than this, but the theory remains the same. Often, error checking is used, whereby the data received is sent back to the donor computer for comparison. If it does not match perfectly, it is sent again until an error timeout signal occurs and the data flow is stopped. Data streams are usually sent in blocks of eight characters, with one or two stop bits in-between. Each block usually alternates between error-checking (sendback) and transfer.

Many more projects could emerge from the basic programs shown here. For example, you could write a two-way chat line between two computers or make it the foundation of a head-to-head game. The sky is the limit! The future of inter-communication between computers does seem more hopeful now than it did. Commodore are talking about new machines which will have Pentium compatibility and read PC disks as standard. It does seem sensible to follow this route, especially if our favourite machine is going to continue to exist in any form into the 21st century. AS

LISTING 2: RECEIVING

Our second short program deals with receiving files via the **Aux:** port. Note the method used: the protocol is initially read and decoded to produce information about the transporting of the file.

```
/* receive file script */
Say "files will automatically be copied to RAM:"

/* the aux: device is opened, this time to receive
information */

open('input','ser:',R)

/* the entire protocol block is read from ser:, it
is 32 characters long */

 protocol=readch('input',32)

 file_name=substr(protocol,1,pos('+',protocol)-1)

 file_data=substr(substr(protocol,17),▼☛
                      1,pos('+',file_data)-1)

 /* the previous three lines extract the necessary
information from the protocol block */

say " name:" file_name
say "length:" file_data

err1=open('output','ram:'file_name,w)

if err1>1 then exit

/* The characters are read from the input source in
a block the size of the file being transferred.
Note: If you intend to send blocks of information
that are very large, then you may wish to send
chunks at a time, depending on the serial buffer
available */

   character=readch('input',file_data)

/* The block read from the input source is now fed
out as a similar character block. */

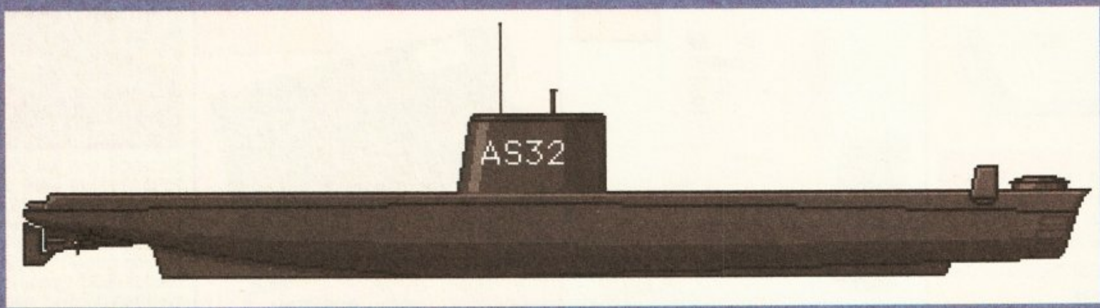
   writech('output',character)

   say 'copied.'

   close ('input')

/* Finally, the file is closed. The transfer is
complete */
```

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AMOS action

Jason Holborn extends our AMOS paint program with the addition of the Freehand Draw, Fill and Undo functions.

AMOS is not just for creating games – it offers a selection of powerful yet easy-to-use facilities for writing all kinds of applications, as you've been seeing as we've built up our own paint program over the last few months. However, if you tried using the compiled version of *AS Paint* on last month's *Amiga Shopper* cover disk, then you've probably already discovered that it doesn't, as such, do a great deal yet. It looks very pretty and it demonstrates the beginnings of a very usable interface, but it certainly wouldn't win any prizes for painting power. This month we take *AS Paint* one step further with the addition of the Freehand Draw, Fill and Undo functions. With these functions in place, you should finally be able to draw pretty pictures on your screen.

Before we go any further, however, let's consider exactly what is involved. We could simply sit down and code away, but – as any professional programmer will tell you – this sort of practice creates nothing but problems as the program matures and you have to figure out how to make all the new bits work happily with the old. It's also worth keeping an eye out for routines that you feel you may perhaps need to use again in another feature of the program – the Undo function, for example, is coded in the form of a procedure that is called by each and every drawing function. For any routine that may need to be used again, you can save yourself a lot of time by coding this as a procedure.

The Freehand Draw function cheats a little too. In order to give the impression of a continuous line of pixels, the freehand code plots lines instead of individual dots (like most art packages). This is exactly the same procedure used by *Deluxe Paint* – if you move the mouse pointer at a very rapid speed, you'll notice that *DPaint* draws straight lines instead of smooth curves.

The Freehand Draw function also needs to be able to cope with a variety of different brush styles and sizes (just like *DPaint*). Unfortunately we can no longer use the line drawing technique employed by the standard Freehand function because it would simply be too slow to plot every dot required to form the shape of the brush. The Freehand Draw function therefore checks what type of brush it should use and then draws on to the screen either by using lines or by plotting individual dots. To see how it works, let's get stuck into this month's source code.

1. Before we can start work on the new procedures to handle the Freehand Draw tool, we need to extend the main program to cope with the new brush drawing routines. Just like *DPaint*, *AS Paint* will offer the user a selection of different brush sizes ranging from a single pixel dot to a variety of filled circles, boxes and airbrush-like patterns. All the brush pattern definitions are held inside a two-dimensional array called **'Brush()'**. This is defined as nine lots (giving a total of nine different brush types) of eight data items.

2. Not only does the **'Brush()'** array need to be made global (enabling other procedures to access the data held within it), but we also need to create an additional global variable called **'BrushSize'** that is used to keep track of the currently selected brush pattern. This variable simply contains a value between 0 and 9 that defines which brush the various drawing functions should use.

3. Before the main program starts, the Undo buffer is initialised by calling the procedure **'_INITUNDOBUFFER'**. We'll be covering this procedure later.

4. The contents of the **'Brush()'** array are then initialised too by calling the **'_INITBRUSHES'** procedure. This procedure writes the brush definitions into the **'Brush()'** array.

5. Right, now let's move on to the first new procedure this month. The **'_PROCESSTOOLS'** procedure is responsible for taking the number of the selected gadget (which is passed to the procedure in the **'SELECTED'** parameter) and then calling the appropriate drawing function.

6. Obviously not every drawing function has been added yet, so the **'_PROCESSTOOLS'** procedure only works on a minimal number of tools. In order to establish which drawing function the user has currently selected, the contents of the variable **'SELECTED'** are checked. The **'SELECTED'** variable can contain any value between 0 and 20, each of which points to a particular tool icon on the toolbar screen.

7. If the variable **'SELECTED'** contains a value of '1', the program jumps to the procedure that handles freehand drawing. This procedure is called **'_FREEHANDDRAW'**. We'll be looking at this function real soon.

8. If the **'SELECTED'** variable contains a value of '12', the program jumps to the procedure that handles the Fill tool. As you might expect, this procedure is called **'_FILLAREA'**.

9. If the **'SELECTED'** variable contains a value of '18', the program jumps to the procedure that handles the Undo function. This procedure is called (not surprisingly) **'_UNDO'**.

10. Now we move on to the **'_FREEHANDDRAW'** procedure. This is a very intelligent little routine that not only allows the user to draw directly on to the screen, but works in such a way that if the left mouse button isn't being pressed or the mouse pointer is still over either the colour selector or toolbox screen, the user is free to selected different colours and change tools without having to break out of a loop first.

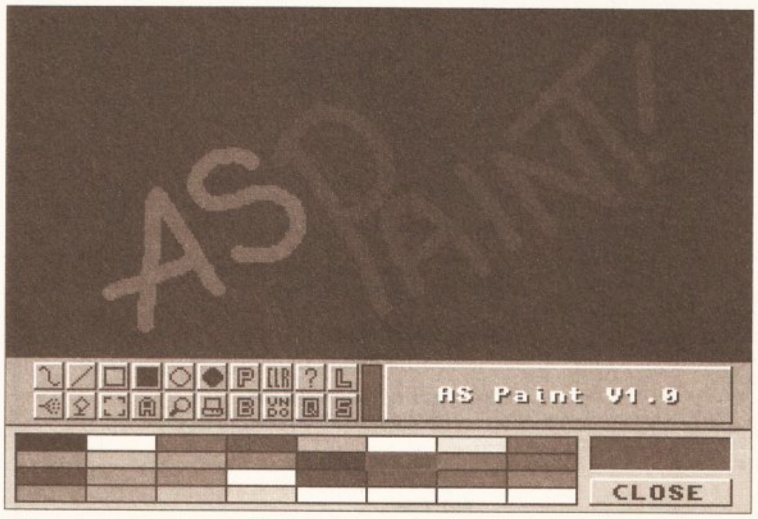
11. Just to make sure that all drawing operations are performed on the "page" screen, the current screen is changed to screen zero.

12. Just to make sure that the program doesn't go executing a whole lot of code unnecessarily, the procedure starts by checking that both the left mouse button is pressed and the mouse pointer is over screen 0 (our "page" screen).

13. If both of these checks are true, the procedure knows that the user wants to draw on to the screen, so the first thing that must be done is to update the **Undo** buffer so that if the user makes a mistake, they can easily remove the last change. This is carried out by a procedure called **'_UPDATEUNDOBUFFER'**.

14. With up to 32 colours on tap, all the drawing functions must be able to take advantage of them. The current colour is therefore changed to the ink colour held within the variable **'CURCOLOR'**. Note that this variable is updated by both the colour selector and the colour selection gadget on the toolbox screen. If the user selects a different colour while the Freehand Draw gadget is still selected, the ink colour will be updated automatically when they start drawing again.

15. If the user is using a single dot brush, the Freehand Draw function works by drawing lines between a set of successive coordinates. By default, the first set of coordinates will be set to '0,0', so we need to read the position of the mouse



At last AS Paint can actually be used to draw pretty pictures! Type in this month's code – or just copy it off this month's cover disk – and you'll be able to use the Freehand Draw, Fill and Undo functions to your heart's content.

pointer by reading the values returned by the **'X Mouse'** and **'Y Mouse'** functions. Note that these two functions return coordinates in the form of "hardware coordinates" – that is, the coordinates system used by the Amiga's display hardware rather than the simple coordinates used by screens.

16. The Freehand Draw procedure then enters a simple **'Repeat...Until'** loop which carries out the actual drawing operations.

17. Once it's inside the loop, the second set of coordinates is read into the variables **'X1'** and **'Y1'**, ready to be used for the first drawing operation. Once again, these are held in the form of hardware coordinates, not screen ones.

18. As mentioned, the Freehand Draw function works in two ways – line drawing and dot plotting – which are selected according to the current brush size. We therefore start by checking whether the global variable **'BRUSHSIZE'** contains a value of zero (indicating a single dot drawing pattern).

19. If it does, the procedure enters line drawing mode. After much experimentation, I found it necessary to actually slow AMOS down when drawing lines whose coordinates were obtained from the mouse pointer. Without this simple one vertical blank wait, AMOS tends to forget to read the mouse coordinates, producing some rather strange results. If you don't believe me, try removing this line!

20. A line is then automatically drawn from the set of coordinates held in **'X1'** and **'Y1'** to the coordinates held in **'X2'** and **'Y2'**.

21. If the variable **'BRUSHSIZE'** holds a value greater than zero (indicating a brush size larger than just a single dot), the Freehand Draw procedure jumps to a general-purpose procedure called **'_DRAWBRUSHPOINT'** that plots the brush pattern on to the screen. This procedure has been written in such a way that it can be used by all the other drawing functions that need to be able to use the variety of different brush patterns on offer. More on this procedure later.

22. To ensure that any extra lines drawn when in brush mode 0 are linked, the last set of co-ordinates held in **'X1'** and **'Y1'** is copied into **'X2'** and **'Y2'** respectively.

23. Next, we move onto the **'_DRAWBRUSHPOINT'** procedure that is used to plot the shape of the selected brush on to the screen. It requires two parameters to be passed – **'X1'** and **'Y1'** – that contain (not surprisingly) the position on the screen where the brush

LISTING 1

```
   ' **********************************
   ' **                              **
   ' ** AS Paint V 0.35              **
   ' **                              **
   ' ** Written by Jason Holborn     **
   ' ** For Amiga Shopper            **
   ' **                              **
   ' ** Part : 4                     **
   ' **                              **
   ' **********************************
   '
   SCRMOD=1
   CLOURS=9
   CURCOLOR=1

   Dim GADG(20,4),PALTTE(32)
   Dim CGADG(34,2)
1. Dim BRUSH(9,8)

   Global SCRMOD,CLOURS,GADG(),PALTTE()
   Global CURCOLOR
   Global SELECTCOL,REDRAWCBLOCK,SCRYPOS
   Global XRATIO,YRATIO
   Global CGADG(),REDRAWCBORDER,NEWCOLOR
2. Global BRUSHSIZE,BRUSH()
   '
   MAIN:
   _SCREENFORMAT
   _OPENSCREEN
   _TOOLBOX

3. _INITUNDOBUFFER
4. _INITBRUSHES
   '
   Repeat
     _TOOLDRAG
     _COLORSELECTOR
     _CHECKICONS[SELECTED]
     SELECTED=Param

   Until SELECTED=19
   '
   End
   '
5. Procedure _PROCESSTOOLS[SELECTED]
6.   If SELECTED=1
7.     _FREEHANDDRAW
     End If

     Rem *** Rest of paint tool code goes here

8.   If SELECTED=12
       _FILLAREA
     End If

9.   If SELECTED=18
       _UNDO
     End If
   End Proc
   '
10.Procedure _FREEHANDDRAW
11.  Screen 0
12.  If Mouse Key=1 and Mouse Screen=0
13.    _UPDATEUNDOBUFFER

14.    Ink CURCOLOR
       Gr Writing 1

15.    X2=X Screen(X Mouse)
       Y2=Y Screen(Y Mouse)
16.    Repeat
17.      X1=X Screen(X Mouse)
         Y1=Y Screen(Y Mouse)

18.      If BRUSHSIZE=0
19.        Wait 1
20.        Draw X1,Y1 To X2,Y2
         Else
21.        _DRAWBRUSHPOINT[X1,Y1]
         End If

22.      X2=X1 : Y2=Y1
       Until Mouse Key=0
     End If
   End Proc
   '
23.Procedure _DRAWBRUSHPOINT[X1,Y1]
24.  For A=0 To 7
25.    BITMAP$=Bin$(BRUSH(BRUSHSIZE-1,A),8)
26.    For B=1 To 9
27.      XOFF=-3+B
         YOFF=-3+A
28.      If Mid$(BITMAP$,B,1)="1"
          Plot X1+XOFF,Y1+YOFF
         End If
       Next B
     Next A
   End Proc
   '
29.Procedure _INITBRUSHES
30.  Restore BRUSHDATA
31.  For A=0 To 8
       For B=0 To 7
32.      Read BRUSH(A,B)
       Next B
     Next A

33.  BRUSHDATA:
     Data 0,0,16,56,16,0,0,0
     Data 0,0,24,60,60,24,0,0
     Data 56,124,254,254,254,124,56,0
     Data 0,124,124,124,124,124,0,0
     Data 0,0,60,60,60,60,0,0
     Data 0,0,56,56,56,0,0,0
     Data 0,0,0,24,24,0,0,0
     Data 128,0,8,0,64,0,0,0
     Data 8,0,0,1,136,0,0,16
   End Proc

34.Procedure _INITUNDOBUFFER
35.  Change Mouse 2
     Screen 0
36.  SCRX=Screen Width
     SCRY=Screen Height
37.  SDEPTH=Screen Colour
     SCRMOD=Screen Mode

38.  Screen Open 5,SCRX,SCRY,SDEPTH,SCRMOD
     Flash Off : Curs Off : Cls 0
     Screen Open 6,SCRX,SCRY,SDEPTH,SCRMOD
     Flash Off : Curs Off : Cls 0
     Screen Hide 5
     Screen Hide 6
   End Proc
   '
39.Procedure _UPDATEUNDOBUFFER
40.  Screen Copy 0 To 5
   End Proc
   '
41.Procedure _UNDO
42.  Screen Copy 0 To 6
43.  Screen Copy 5 To 0
44.  Screen Copy 6 To 5
45.  Wait 5
   End Proc
   '
46.Procedure _CHECKICONS[SELECTED]
     Screen 7
     If Mouse Key=1 Then ICON=Mouse Zone
     If ICON<>0
       _HIGHLIGHTICON[ICON,SELECTED]
       If ICON<21
         SELECTED=ICON
       End If
     End If
47.  If SELECTED<>0
48.    _PROCESSTOOLS[SELECTED]

49.    If SELECTED=18 or SELECTED=8
50.      _HIGHLIGHTICON[1,SELECTED]
51.      SELECTED=1
       End If
     End If
     Screen 0
   End Proc[SELECTED]

52.Procedure _FILLAREA
     Screen 0
53.  If Mouse Key=1 and Mouse Screen=0
54.    _UPDATEUNDOBUFFER

55.    Ink CURCOLOR
       Gr Writing 1

56.    X=X Screen(X Mouse)
       Y=Y Screen(Y Mouse)

57.    Paint X,Y,1
     End If
   End Proc
```

pattern is to be drawn. We could simply have read the mouse pointer coordinates from directly within this procedure, but passing them as parameters means that the procedure can be used to draw a variety of different shapes, including circles and boxes.

24. The brush pattern definitions are held in a two-dimensional array containing eight different values for each brush. These values are extracted by using a loop that counts from zero to seven.

25. Each of the eight values assigned to each brush definition is transferred into a string variable called **'BITMAP$'** in binary notation. In many ways, this technique is exactly the same as the technique we used to draw the toolbox gadgets. A zero in the binary pattern turns the pen off and a value of 1 turns it on.

26. Each bit in the binary pattern is extracted in turn by entering a second loop that counts from 1 to 9.

27. By default, each and every brush will be drawn on the screen using the **'X1'** and **'Y1'** coordinates as the origin at the top left hand corner of the brush. In order to centralise the brush so that it is drawn immediately below the mouse pointer, a set of offsets is calculated.

28. Finally, a quick **'If...Then'** decision is made to check whether a point should be plotted. Using the counter that is updated by the second loop, each bit in the binary number is checked to see whether it is a 1 or a zero. If it is a 1, a dot is plotted on to the screen using the AMOS **'Plot'** command.

29. In order for any of *AS Paint's* drawing functions to work, a set of nine brushes is defined using the **'_INITBRUSHES'** procedure.

30. First, we start by pointing AMOS to the brush data statements using the **'Restore'** command.

31. The entire brush data consists of nine sets of eight data statements. In order to make absolutely sure that these data statements get read correctly, a nested set of **'For...Next'** loops is used.

32. The data items are then read from the data statements, an item at a time, and placed directly into the **'Brush()'** array.

33. Finally, here's our brush data in all its glory.

34. Next, we move on to the **'_INITUNDOBUFFER'** procedure that sets up the **'Undo'** buffer. This is used to allow the user to revert to the image as it was before the last painting operation. Our Undo function is somewhat wasteful of memory, but it works very well indeed. All it does is keep two screens of exactly the same resolution and depth hidden away from the user, and whenever a change is made to the "page" screen (Screen 0), the old version of the image is transferred to one of these two hidden screens. The second hidden screen is needed to act as a temporary storage area when the two screens are exchanged when the user clicks on the **'Undo'** gadget.

35. Before we start the real work of setting up the Undo buffers, let's change the mouse pointer to a crosshair shape. Most paint programs use a crosshair shape for the mouse pointer because it allows for much better positioning of individual pixels.

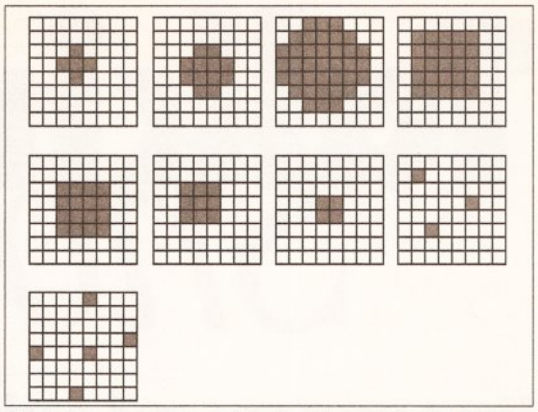
36/37. Before we can open the two Undo buffers, we need to find the exact resolution, depth and screen mode of the "page" screen. This is done using four very handy (and self-explanatory) functions offered by AMOS – **'Screen Width', 'Screen Height', 'Screen Colour'** (returns the depth of a screen) and **'Screen Mode'** (returns the mode of a screen – hi-res, lo-res, laced, or whatever it may be). The values returned by these functions are then stored into variables ready for use.

38. With these details extracted from the "page" screen, we then open up our two Undo buffers in exactly the same resolution, depth and mode. Once this is done, AMOS's automatic colour flashing and text cursor are turned off and then cleared using colour 0. Both screens are then hidden from view using the AMOS **'Screen Hide'** command.

39. Each time a new drawing operation is initiated, the current contents of the "page" screen are transferred to the Undo buffer so that AMOS has a copy of the "page" screen as it was before it was modified. This is done using the **'_UPDATEUND OBUFFER'** procedure.

40. The procedure contains just a single line that transfers the entire contents of screen 0 (the "page" screen) to screen 5 (the first of our Undo buffers). The **'Screen Copy'** command is used here because it can shift screen memory around very fast indeed with the help of the Amiga's blitter chip.

41. Even the **'Undo'** procedure itself is not that complicated. All it does is to swap the contents of the Undo buffer and the "page" screen so that the the screen reverts to the original. The good thing about this function is that even if the user then decides that they'd like the modified version back again, all they have to do is to click the **'Undo'** gadget again and voila – the screens are simply swapped again and it's back!



All of the nine standard brush patterns that AS Paint can use are simply defined using an 8 x 8 grid.

42. First, the contents of the "page" screen are transferred to the temporary Undo buffer using the **'Screen Copy'** command.

43. The unmodified version of the "page" screen held in the Undo buffer is then transferred back to the "page" screen.

44. Finally, the modified "page" screen that we transferred to the temporary Undo buffer is transferred to the first Undo buffer (screen 5).

45. To stop **Undo** from flicking backwards and forwards between the modified and unmodified images, the user is given time to release the mouse pointer by halting the program for a tenth of a second.

46. Remember the **'_CHECKICONS'** procedure we covered last month? Well, the time has come to extend it to handle the new drawing functions. You don't need to type in the whole procedure – just the extra lines that have been added from lines 47 to the end of the procedure.

47. If the variable **'SELECTED'** contains a value greater than zero, the section of code inside this **'If...Then'** construct is performed.

48. The value held in **'SELECTED'** is then passed to the **'_PROCESSTOOLS'** procedure that we covered earlier, allowing *AS Paint* to act upon the currently selected toolbox icon.

49. Whenever an icon is selected from the array of gadgets in the toolbox screen, the icon remains selected until the user clicks on another. Obviously this isn't a lot of use if the user clicks on either the **'Undo'** or **'Clear screen'** gadgets – if we were to allow **Undo** to remain selected, *AS Paint* would continuously swap the Undo buffers until the user selected a different gadget. To stop this from happening, we use a simple **'If...Then'** construct that starts by checking if the variable **'SELECTED'** contains the numbers of the **'Clear'** and **'Undo'** functions.

50. If either function was selected, the gadget for that particular function is deselected by calling the **'_HIGHLIGHTICON'** procedure we covered last month.

51. And, to make sure that the function is no longer processed by the **'_PROCESSTOOLS'** procedure, the value of the **'SELECTED'** variable is reset to a value of one, in effect defaulting to selecting the Freehand Draw function.

52. Finally, let's take a look at the **'_FILLAREA'** procedure that handles *AS Paint's* Fill tool.

53. Just like the Freehand Draw function, the Fill function starts by checking that the mouse pointer is over screen 0 and that the left mouse button is being pressed. If either of these conditions is false, the Fill operation won't go ahead.

54. Once again, before the area of the screen that the user wishes to fill is even touched, the Undo buffer is updated, allowing the user to revert to an unmodified copy of the image should something go terribly wrong. (How many times have you filled an area of the screen only to have the "paint" leak out because there's a break in the boundary that should contain the fill operation?)

55. The colour which is to be used for the fill operation is then set by reading the contents of the **'CURCOLOR'** variable.

56. The coordinates of the mouse pointer are then read to establish where on the screen the Fill operation is to be performed.

57. Finally, the screen area is filled using the AMOS **'Paint'** command. Note how paint mode one is used – this restricts the Fill operation to an area of the screen that is sealed by pixels of a different colour. AS

Talking Shop

Have your say, and perhaps win £25 into the bargain! Send your missives to: "Talking Shop", Amiga Shopper, 30 Monmouth Street, Bath, Avon BA1 2BW.

"JUICY, USEFUL STUFF"

When *Amiga Shopper* first came out it was a cheap source of Amiga advice and information. It didn't have a cover disk, which at the time was a refreshing change.

I'm glad to say, however, that the magazine has matured by including full colour photos and a really, really useful cover disk. [There followed a chastisement of a certain other Amiga magazine which I've decided to cut – Ed.]

Your cover disk is a real enthusiast's disk, heightening your readers' productivity with their machines: fonts for those who use their machines for DTP; source code for programmers; databases; hard disk utilities; music programs for musicians and virus checkers for everybody.

But what about us graphic artists? Sure, there have been fractal generators, but what about the really juicy, useful stuff like objects and textures for *Imagine* and *Real3D?* Now that the cover disk is here to stay, please keep it a mixed bag for everyone every month, rather than bias it towards one particular type of user.

Jonathan McBrien
Enniskillen
Fermanagh

Glad you like the disk, Jonathan. You can rest assured we intend to keep it as well-balanced as possible.

On the graphics front, we intend to include a few high-quality backgrounds from VideoWorld as soon as we've got some space. And if anyone out there has some *Imagine* or *Real 3D* files we could use, we'd love to hear from you.

KEYLESS MONDEO

£25 WINNER

I recently bought an A4000/030 from a mail order company. When I came to set it up I found that the factory-sealed pack of six disks had two copies of the Fonts disk and no Workbench disk. I rang the mail order company, who not unreasonably said that since the disks were in a sealed package it was really up to Commodore. A friendly and sympathetic lady at Commodore offered to send the missing disk within 28 to 30 days.

So there I was, unable to use my thousand quids' worth of brand-new gear for a month or so. The lady at Commodore suggested that I should ask the supplier for a naughty copy. My mail order company had a good laugh at this, but then managed to unearth a legitimate copy, which they sent off to me.

Commodore's replacement disk arrived 32 days after my phone call. If Ford supplied a Mondeo with no ignition key, would it take them a month to find one?

D B Beames
Macclesfield
Cheshire

Well, strictly speaking it was the mail order company's duty to sort you out, not Commodore's – your contract is with the seller, not the manufacturer. Having said that, Commodore's response doesn't exactly inspire confidence, does it?

"TELL ME WHY"

Can you tell me why, when I come to run the de-archived version of *Virus Checker* that you supplied on last month's cover disk, it crashes my machine?

John Millfield
Sunderland
Tyne and Wear

Ah, yes... oops. The program will work once installed, but we didn't include an installation program, and we didn't include a document reader so that you could read the documents to find out how to install it manually. Don't worry, the person responsible is hanging from the roof of Future Publishing by his chained wrist, where he will remain until the end of time.

Now, the solution. You must first dearchive *Virus Checker* on to a blank disk, as normal. Then, if you have Workbench 2 or higher you can drop the *Virus Checker* icon into your **WBStartup** drawer. Otherwise you'll need to copy the file on to the **c:** directory of your Workbench disk. Assuming the disk you've de-archived everything on to is called **Empty**, you can do this from the Shell as follows:

```
copy Empty:virus_checker c:
```

You'll also need to modify your **startup-sequence**. From the Shell type this line:

```
ed s:startup-sequence
```

Then, just before the line that reads **loadWB**, add the following line:

```
c:virus_checker
```

Then press **<Esc>-X** to save the modified version.

Whichever version of Workbench you are using, there are a further three files that must be copied. Open a Shell and type the following lines (I'm still assuming you've de-archived to a disk called **Empty**. If not, replace the word "Empty" in the following lines with the name that you *have* given it):

```
copy Empty:bootblock.brainfile l:
copy Empty:bootblock.library libs:
copy Empty:decrunch.library libs:
```

And once you re-boot, *Virus Checker* will be running.

"MORALITY"

My immediate impression upon reading the Computer Crime feature in *Amiga Shopper* 29 was of a rather one-sided article in a generally accurate magazine. Dave Winder did an excellent job of covering the broad spectrum of computer crime, but his article was devoid of any consideration of the morality of the topics raised.

Mr Winder's discussion of computer hacking was decent, but he failed to consider the most prevalent danger to world-wide computer networks: not hobbyists, who penetrate systems to gratify their unbalanced egos, but professional dealers in confidential information.

My true objection, however, lies in his discussion of piracy. Admittedly, this is a major problem, especially for the Amiga, but it is also frequently misrepresented. Although it is a cause of loss of sales to software distributors, the numbers are nowhere near as high supposed. In actual fact, software theft only represents loss to the distributor if the thief would otherwise have bought the software in the first place, which is rarely the case. Most of the pirates I've met have collections of software which they never ever use. They keep this software in order to increase the size of their collections. This also seemed to be the case with "Harold", the pirate interviewed by Dave Winder.

Dave also wrote, "Have you ever thought that when you purchase one of these types of [music] **demos, someone, somewhere, is losing money?" With reference to the public domain demos that clutter shelves everywhere, this comment is patently absurd. I challenge you to find me a single person who buys a demo because it contains a badly re-hashed version of the latest techno hit, rather than buying the legitimate CD or tape.**

Jesse Sanford
Phillips Exter Academy
Exeter, NH 03833
USA

(Jesse asked that his full address be printed, so by all means write to him if you want to continue the debate.)

The article intentionally concentrated on the facts rather than their morality, but I think we made our position reasonably clear by using the word "crime" in the title.

I'm sure you're right that most people who pirate software wouldn't pay for originals if they had no other way of obtaining them; likewise that no one gets a PD demo as a substitute for properly-recorded music. Nevertheless, the law is the law, and these are both in contravention of it.

We're always on the look-out for interesting letters, but please keep them short and bear in mind that we reserve the right to edit them. We're particularly interested to learn about any unusual uses you put your Amiga to, and software that you'd like to see on the Amiga. AS

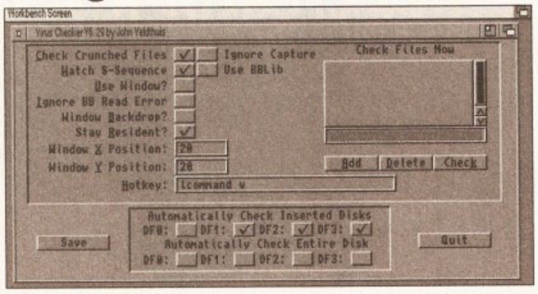
AREXX FOR ALL

By popular demand, Jason Holborn takes a look at automating Virus Checker through ARexx control.

Here at *Amiga Shopper*, we're always keen to hear your suggestions. Since this ARexx column started last year, we've been deluged with letters suggesting programs that we could cover in the ARexx column – not all of them ARexx compatible, I might add! By far the most popular suggestion has been John Veldthuis' *Virus Checker*, an indispensable program that has featured on our cover disk on a number of occasions as successive revisions have appeared. So this issue we're bowing to your wishes.

Virus Checker has come a long way since its original release. The latest version (6.31) boasts a full Workbench 2.0-like user interface and can even be run as a commodity. *Virus Checker* can trap a whole host of viruses, including the age-old boot block *SCA* and *Byte-Bandit* viruses, *Revenge*, *North Star*, *HCS*, *Disk Doktors* and many others. It also smites non-bootblock-based viruses including *IRQ* (which copies itself from file to file by attaching itself to the first executable file in your startup-sequence), *BSG9*, *Revenge Lamer Exterminator* (which creates a blank executable program which it inserts into your startup-sequence) and the dreaded *Saddam* virus (which hides itself as the AmigaDOS disk validator).

The symbol ☛ means *do not* type a return – keep typing to the end of the next line. ▼☛ means type a space, then keep typing to the end of the next line.



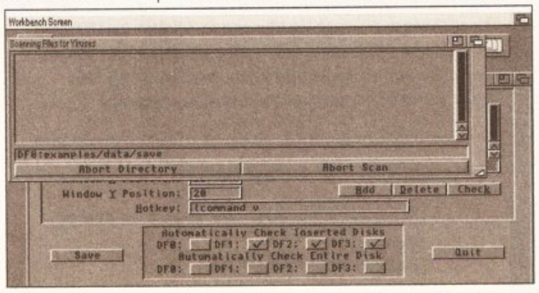
Trap those deadly viruses before they wreak havoc on your data by automating John Veldthuis' Virus Checker under ARexx control – it's as easy as one, two, nine!

What makes *Virus Checker* so special, however, is not the wide range of viruses that it can kill, but the fact that it is the first public domain virus checker to feature an ARexx port. What this means is that you can write your own ARexx scripts to instruct *Virus Checker* to carry out a whole range of tasks whenever you want it to. Although there are only nine ARexx commands offered by *Virus Checker*, these cover just about every feature of the program.

PORT AND LEMON

First, as always, your scripts need to open up a communications channel with *Virus Checker* via its ARexx port using the ARexx **'Address'** command. *Virus Checker's* ARexx port is called – not surprisingly – **'Virus_Checker'.** Once again, upper and lower case are very important, so you must enter the port name exactly as it is printed here. If you enter the port name in any other format, ARexx will be unable to find *Virus Checker* even if you've spelled the port name correctly. This is in total contrast to AmigaDOS's "couldn't care less" attitude towards case sensitivity. Anyway, let's start by opening up the port to *Virus Checker* with the following line.

```
Address ▼☛
'Virus_Checker'
```



The entire contents of a disk can be checked for file viruses with a single Virus Checker command.

With the port now open, we're free to pass commands to *Virus Checker*. Let's look in turn at each of the nine commands.

❶ **CheckDrive\[drive]** – This command instructs *Virus Checker* to check a named drive for file viruses. The drive (**'[drive]'**) parameter can be entered either as a disk name (**'MyFiles:'**) or as a device name (**'df0:'**). If, for example, you wanted *Virus Checker* to scan a disk in drive **df0:**, you would therefore enter the line **'CheckDrive\DF0:'.** It's worth noting that the entire command line must be entered as a single word with the backslash symbol ('\') being used to separate the command from its parameters. Take a look at this quick demonstration listing.

```
/* Virus Checker Demonstration */

address 'Virus_Checker'
parse arg drive

'checkdrive\'drive
exit
```

This listing is fairly straightforward. After it opens a link with *Virus Checker* with the **'Address'** command, the name of the drive to be checked is extracted from the command line and placed into the ARexx variable **'drive'**, which in turn is passed to the **'checkdrive\'** command. If *Virus Checker* is running, you should see a requester pop up on the screen and *Virus Checker* will start to check each and every file on the named disk for any file link viruses.

❷ **ScanForSaddam\[drive]** – This command instructs *Virus Checker* to check a named drive or disk for the dreaded Saddam virus.

❸ **Quit** – Instructs *Virus Checker* to shut down.

❹ **SaveConfig** – Instructs *Virus Checker* to save the current *Virus Checker* **'.config'** file to disk.

❺ **Window\[on or off]** – The **'Window'** command instructs *Virus Checker* to open or close its window under ARexx control. The command does not toggle, however, so you must either pass **'on'** (open the *Virus Checker* window) or **'off'** (to close the window). If the window is already open and you pass the **'on'** parameter, the **'Window'** command will simply be ignored. This means of course that it's impossible to toggle

---

BEGINNERS BEGINNERS START HERE BEGINNERS

What is ARexx?

ARexx is a programming language bundled free with all Amigas based on Workbench 2.04 or better. Written by William S Hawes, ARexx can not only handle the tasks normally associated with programming languages like BASIC but can also control other applications that feature an ARexx "port". By simply writing an ARexx "script" (the ARexx equivalent of a source code program), you can automate any application that can communicate with ARexx. Take ASDG's *Art Department Professional*, for example. Because *ADPro* can be controlled by ARexx, you could write a script that instructs *ADPro* to load in a list of images, process each in turn and then save them back out to disk. (The details of this were covered in *Amiga Shopper* 28, 30 and 31 – even if you don't own *ADPro*, a useful guide to what you can achieve with ARexx. To order any of these issues, turn to page 90.)

What is an ARexx "Port"?

For ARexx to be capable of controlling an application, the application must feature what the techies call an ARexx "port". This acts as a sort of "back door" to an application that ARexx uses to communicate with it. Think of the set-up as a sort of telephone network, if you like – whenever ARexx wants to talk to an application, it simply dials the number of the application – the ARexx equivalent of a telephone number is the name assigned to the port; in the case of the *Virus Checker* program featured here, the port name is **'Virus_Checker'.** If the program is on the phone (that is, has an ARexx port), then ARexx is able to communicate with it.

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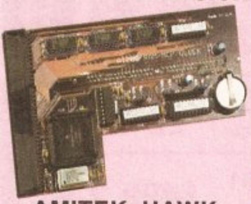
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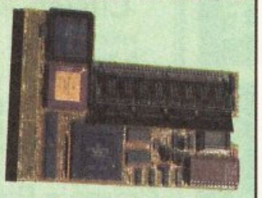
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JARGON BUSTING

Commodity – A commodity is a special program that runs in the background under the control of the *Exchange* program on all Workbench disks since 2.04. Commodities run in the background and remain completely hidden until they are brought into view by clicking on the **'Show Interface'** gadget in the *Exchange* program.

Virus – A small program written by a demented programmer that copies itself from disk to disk, causing damage as it goes.

the window closed accidentally!

❻ **Drive\[drive] [on or off]** – The **'Drive'** command instructs *Virus Checker* to turn on or off its automatic checking of bootblocks for disks placed into any floppy drives attached to the Amiga. You may want to use this command when launching a PC-emulator like *PC-Task* that uses MS-DOS-format disks. Because MS-DOS format disks do not have an AmigaDOS bootblock, *Virus Checker* will throw up a "Non-standard boot code" error every time an MS-DOS disk is inserted, forcing you to close the *Virus Checker* requester manually.

❼ **Resident\[on or off]** – Issuing this command instructs *Virus Checker* to turn off its **'resident'** flag so that the program is removed whenever the *Virus Checker* window is closed.

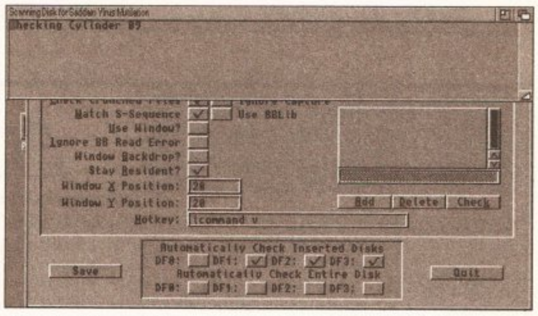
❽ **CheckFile\[Filename]** – The **'CheckFile'** command instructs *Virus Checker* to check a named file (complete with full path information if the file is not in the current directory) for "link" viruses like *BSG9* and *IRQ*. It's worth noting that the **'CheckFile'** command turns off the *Virus Checker* requesters while it's doing its stuff. If the command **'Options Results'** is used, *Virus Checker* will return a value to **'Result'** if a virus is not found. If a virus was found, however, then **'Result'** will contain the string "VIRUSNAME virus was/is present in the file". This doesn't necessarily mean that the virus has been removed, however, so don't automatically assume that it has been. If *Virus Checker* encountered problems while it was trying to remove the virus, it may have simply thrown in the towel.

This option could be of particular use to anyone who runs a Bulletin Board System (BBS). If you're feeling adventurous, you could easily write an ARexx script that instructs *Virus Checker* to automatically "file check" any new files that are uploaded onto the board. Obviously it makes sense to make sure that files really are clear from all viruses yourself before placing them into your board's file area, so you may want to add a facility to your script that automatically creates a "log file" containing details of all the files that were uploaded and then checked by *Virus Checker*.

❾ **CheckBootBlock\[drive DFn:]** – This command instructs *Virus Checker* to check a named floppy drive ("df0:" through to "df3:") for bootblock viruses. Just like the **'CheckFile'** command, the **'CheckBootBlock'** command returns various results when used in conjunction with the **'Options Results'** command. If the disk was found to be clear of boot block viruses (that is, it has a standard AmigaDOS bootblock) or you give it a drive number greater than 3 (don't forget that AmigaDOS only supports a total of four disk drives numbered from 0 to 3!), then the string "Okay" will be placed into the **'Result'** variable. If, on the other hand, *Virus Checker* had trouble reading the disk's boot block, then the string "ERROR reading BOOTBLOCK" will be returned. If a virus was found on the disk or the bootblock was non-standard (that is, a *CrossDOS*-compatible MS-DOS disk), the string "NON-STANDARD BOOT CODE" is returned. If a recognised virus is found on the disk, however, the name of the virus will be returned.

Unfortunately, although *Virus Checker* will let you search for boot block viruses under ARexx control, the current release doesn't allow you to actually remove them automatically, so don't assume that *Virus Checker* will have fixed everything for you. Instead, you'll have to use the standard technique of clicking on *Virus Checker's* requesters when they appear on the screen. Try the demonstration listing in Listing 1 for size.

The name of the drive to be checked is fed to the script in exactly the same way as the listing that we covered earlier. Using the **'Parse'** command, the name of the drive is extracted from the command line and then placed into an ARexx variable called **'drive'**. We then turn on the **'Checkbootblock'** command's ability to return values using the **'Options Results'** command and, after checking the disk's bootblock by calling the **'Checkbootblock'** command itself, we use the **'Select...When...Otherwise'** construct to act upon the results written into the ARexx **'Result'** variable. Simple, eh?



You don't need the combined might of the US and British armies to kick the Saddam virus off of your disks – just a copy of Virus Checker and ARexx.

Let's take what we've learned one step further with a script that carries out just about every virus-checking task that *Virus Checker* has to offer. Enter the script in Listing 2 and pass it the name of the drive that you'd like *Virus Checker's* to check out for you.

When you run this script, a message should appear on the screen informing you whether the bootblock of the disk in the selected drive is clear of any viruses. Once this is done, *Virus Checker's* file scan requester will pop up on the screen and the entire contents of the selected disk will be checked for file/link viruses. Finally, the structure of the disk will be checked for any damage caused by the Saddam virus. All completely automated, all by a simple ARexx script! AS

LISTING 1

```
/*
 Boot Block Checker
 Feed this script the name of the drive to check!
*/

address 'Virus_Checker'

parse arg drive
Options Results

'checkbootblock\'drive

select
 when result = 'Okay' then
   say 'The disk is virus free!!!'

 when result = 'ERROR reading BOOTBLOCK' then
   say 'Unable to read bootblock!!!'

 when result = 'NON-STANDARD BOOT CODE' then
   say 'The boot block is rather suspect!!!'

 otherwise
   say 'Your disk is infected with the 'result' virus!!!'
   end
exit
```

LISTING 2

```
/* Complete Virus Checker script */

address 'Virus_Checker'
parse arg drive
Options Results

/* First, let's check the bootblock */
'checkbootblock\'drive

select
 when result = 'Okay' then
   say 'The disk is virus free!!!'

 when result = 'ERROR reading BOOTBLOCK' then
   say 'Unable to read bootblock!!!'

 when result = 'NON-STANDARD BOOT CODE' then
   say 'The boot block is rather suspect!!!'

 otherwise
   say 'Your disk is infected with the 'result' virus!!!'
   end
/* And now let's check for file viruses */

'checkdrive\'drive

/* And finally, let's check for any Saddam virus damage */

'scanforsaddam\'drive
```

SOFTWARE for free

The end of Fred Fish's millennium may be closer than you think. Ian Wrigley sorts the wheat from the chaff in the public domain.

Welcome back. Another month, another batch of Fred Fish disks – numbers 891 to 910, this time round. As usual, many thanks to Anglia PD for supplying them. We're also, as is our habit, looking at the best of the other software that's been supplied by PD houses and by the programs' authors. There's quite a backlog now, and I'm having to be pretty selective about what I include – so I won't be looking at every address book program, home accounts package or whatever that's sent in. Sorry, but there you are – there's so much interesting Amiga PD and shareware around that it seems a pity to exclude new and innovative stuff in favour of... er... not quite so innovative programs. (If an address book program does something really great, of course, then I'll take a look and review it here.)

In the past month or two, Fred Fish has announced that he will stop releasing PD on floppy disks at some time in the future – after disk 1,000, to be precise. At that point, he'll release stuff in CD-ROM format instead. Fine if you have a CD-ROM drive, of course, but what about the rest of us? Well, I doubt that PD houses will be keen on having the Fish moneyspinner dry up, so I'd expect most places to subscribe to the CD and then re-package the software themselves. We'll have to see, but it won't be too long now before this happens – we're on disk 910 now, so the collection will probably hit the magic thousand by around the end of the year.

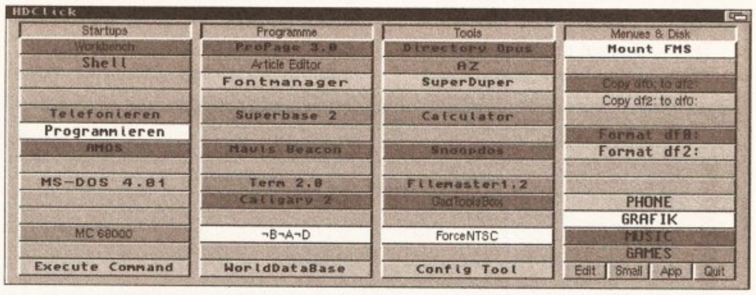
Okay, eyes down for a full house!

HDCLICK

Fish disk 891

HDClick is a rather nice £10 shareware Workbench program selector. To put it simply, you configure the program with the names of the commands and programs that you often use, and set it to start up whenever you start your Amiga by putting it in the **WBStartup** drawer. When running, it displays the names of all those programs and commands as buttons; clicking the button launches the program or performs the command.

HDClick has a number of nice features which make it one of the best program selectors I've come across; the main one is the fact that when the display is reduced to its "small" version, it acts as an AppIcon. In other words, if you drag a file to one of the buttons, the filename is passed as argument to whatever program's name is in that button. So, for example, if you have set up one of the buttons to launch the *LhA* file compressor/decompressor and extract files from an archive, then dragging an archive to the button will automatically decompress it.



HDClick: a rather super, fully-configurable program selector. As well as clicking to trigger commands, you can drag files to specify arguments.

The author of this program, Claude Müller, has obviously spent a lot of time on this program, and it's well worth checking out if you have loads of different programs hidden away on your hard disk and you want an easy way of accessing them all.

Program rating: 8/10

AMIGAWORLD

Fish disk 893

I looked at *AmigaWorld* some time ago, but this is a reasonably major upgrade to the program, so it's worth checking out again. In essence, the program displays information about any country in the world, including its size, population, languages used and currencies. The new version, 2.0, also includes information on the predominant religions of the country, and displays of the flags. The slightly limited version distributed on the Fish disk only has the flags for the Commonwealth of Independent States (the former Soviet Union), but your $20 shareware fee will get you a new data file with the representative pennants of all countries. It also allows you to save configurations, and has one or two other minor tweaks to encourage registration.

Another feature of the new version is that various international organisations are listed, and countries belonging to those organisations can be viewed – along with a short description of exactly what the organisation is, when it was

BEGINNERS START HERE

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software or "freeware" is only one branch of this area; the other main one is shareware.

Essentially, freeware may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her hard work.

The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

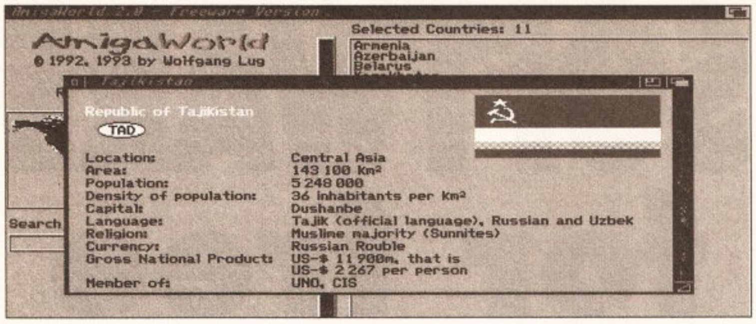
You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a "value for money" rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a "program rating", which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.

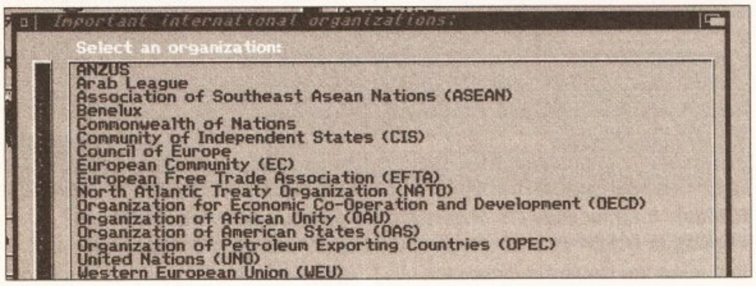


Put away that dog-eared old geopolitical Atlas – AmigaWorld has everything you might conceivably want to know about every country under the sun.

founded and so on. As well as the Commonwealth of Independent States mentioned above, these organisations include NATO, OPEC, the United Nations, and countries which are members of the World Economic Summit (also known as the "G7 countries").

This is a great program for students, and is interesting in its own right – although the data will, of course, soon be out of date, considering how the situation in places like Bosnia-Herzegovina changes almost daily. Still, the fact that the author, Wolfgang Lug, has produced this updated version suggests that registered users will get new data files when they become available. All in all, this is certainly worth checking out.

Program rating: 8/10



AmigaWorld enables you to view the members of various international organisations. Strangely, the AA and RAC don't appear to be listed.

BADLINKS

Fish disk 893

If you use *AmigaGuide* to produce any kind of documentation, then you'll welcome *BadLinks*. *AmigaGuide* files contain buttons which move the reader to other areas of the guide – or, indeed, other guide files on a disk. This is great, but when you're creating the file you have to include information for the Guide program to make those links – and it's easy to mis-type something, which means that if the button is clicked on, the program won't jump to the correct place in the document.

Until *BadLinks* came along, the only way to check that everything was okay was to click on every single button to make sure that you were magically transported to the right place. The problem is that if the Guide document is at all large, then it's easy to miss a button or two – and the law of Sod states that those will be exactly the buttons whose data has been mis-typed. *BadLinks* does away with this problem by checking that every link has a matching "node" – that is, a place to jump to. It creates two files on the RAM disk: one lists all the nodes in your document, the other lists any "bad" links there may be.

That's it, really: short and sweet, but it could save you hours of testing. Of course, it doesn't check that your buttons go to the correct part of the document – only that they go somewhere. But even so, if you write *AmigaGuide* documents then you should certainly have a copy of *BadLinks* available.

Program rating: 8/10

MUCHMORE 3.3

Fish disk 895

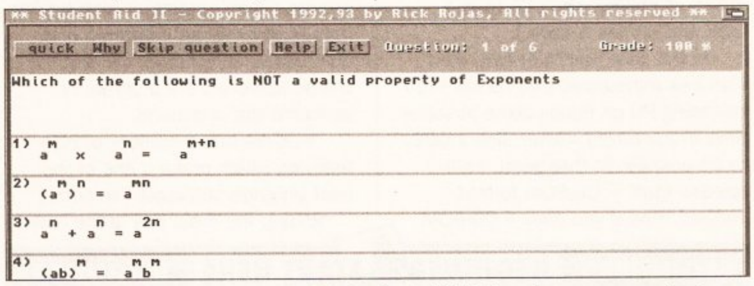
Just a quickie, this: the latest version of *MuchMore*, which includes things like the ability to use any (non-proportional) font to display text, allows text encrypted with the XPK utility to be displayed, gives the user the choice of the colours that text is displayed in, and so on. *MuchMore* is the text viewer of choice for many people (it's so superior to *More*, the utility supplied on the Workbench disks that come with your Amiga, that the two don't bear comparison) and it's probably worth getting hold of version 3.3 just to make sure that you're not using an old version with any bugs in it.

Program rating: 10/10

STUDENT AID II

Fish disk 895

This is a "revision aid" program, which enables you to create and take a range of different tests: multiple choice, true/false and "fill in the blank". The freely-distributable version on this disk works totally except that you can't save a new test that you create; to do that, you need to send off your $34.95 registration fee, in return for which you'll receive the full program.



It's time to go back to school with Student Aid II, the shareware package that enables you to create and take all kinds of tests on your Amiga.

There are a few programs of this type around, but *Student Aid II* is probably the best that I've seen. The display is clear and tidy, the test creation is easy to use, and all in all it's been written very much with the end-user in mind – which is not always the case... It comes with a range of sample tests – useful since you can't make your own until you've registered – and creates graphs of your performance, since it saves the results to disk each time you take a test. The author suggests that the best thing to do is create quizzes (or type in ones handed out by teachers or lecturers) during the course, and then use the program when you come to revise. When creating tests, you can put in an explanation of the correct answer, and while taking the test you choose whether to have this (hopefully lucid) account displayed until you click to move on to the next question, just briefly, or not at all.

If you're at school or college and find that taking such tests is helpful to your revision, *Student Aid II* is an excellent way to computerise them. Whether you want to pay $35, though, when you could just use good old paper and pen for nothing, is another matter...

Program rating: 8/10

SCRIPTTOOL

Fish disk 896

This is a neat little utility to enable you to add commands and programs to your **Tools** menu (in Workbench 2.0 or above). All you do is create a text file which gives the menu entries and actual commands that you want, then install this file and *ScriptTool* itself into the correct directories. The documentation is clear about the format of the text file, which means that you should have no trouble creating your own scripts.

There are a number of programs that do this sort of thing for you; some do everything automatically by having you simply drag icons on to the program, others require complex configuration files to be created by the user. *ScriptTool* is very small, very easy to use and doesn't seem to have any compatibility problems with anything else (at least, not that I've found so far). And you'll soon find that having applications and common commands (launching a new Shell, changing screen mode and so on) in the **Tools** menu makes using the Amiga far easier. Well worth getting hold of.

Program rating: 9/10

SCI-FI TYPE DEMO

Fish disk 898

If you use *Imagine* to create 3D images (or, indeed, any other 3D editing program that can read 3D

continued on page 117



The final typographic frontier? Here are several of the fonts in the Sci-Fi Type package, available for $40.

GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed in these pages, or if you've got any other comments or suggestions, write to Ian Wrigley c/o *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact Ian on cix as 'iwrigley', or on the internet as 'ian@vampire.demon.co.uk'.

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AGA TETRIS (1) - classic game & AGA utilities
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TEXT ENGINE V4.1 (1) latest & best word processor
M-CAD (1) - simple CAD package
OctaMED V5 (1)- non save demo (not V1.3 machines)
NORTH C V2 (2) - Classic C compiler
C MANUAL (12) - essential reading for C programmers
ACC 1-4 (1) - issues 1-4 of Amiga Coders Club
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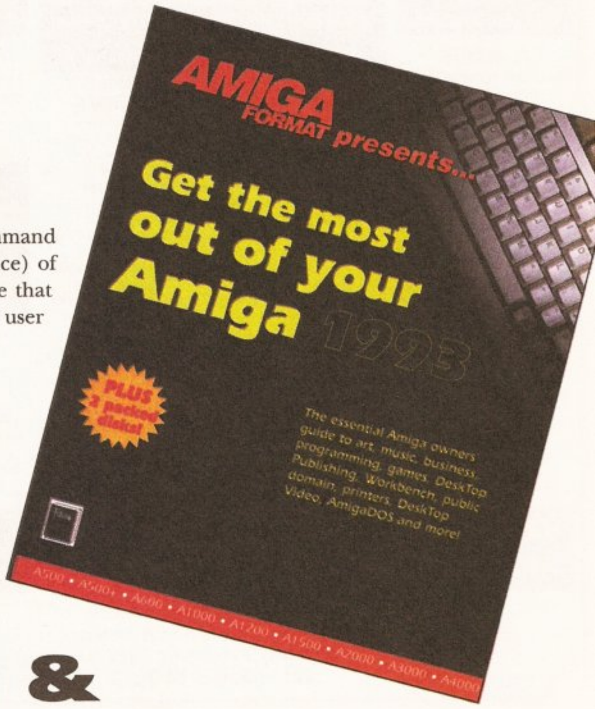
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continued from page 112

objects), then you'll be interested in *Sci-Fi Type*, a set of 14 high-quality 3D fonts. The demo on this disk includes one of the fonts (Ultra) and IFF files with samples of all the others. The fonts are stored as separate objects, so you just load and place them wherever you want in your image. The full set costs $39.99, which seems like pretty good value to me, considering their apparent quality. And even if you don't want them all, you've got Ultra here to play with.

Program rating: 7/10

AROACH

Fish disk 899

This is one of those little "novelty" programs that you have running for... oh, about ten seconds before you trash it. Some odd people, though, may like it enough to keep it for longer than that. It's based on the Unix X-Windows *Xroach* program, and displays pictures of cockroaches on your Workbench screen.

These loathsome insects scuttle around until they can find a window to hide under – although you can normally see a leg or two sticking out from one edge or another. If you close, move or resize the window the roaches will scuttle around again until they find somewhere else to hide. You can select the number of roaches to display, and whether or not they can be "squished" by clicking the mouse on them, then let the program run in the background.

I don't know about you, but just the thought of cockroaches makes me shudder, so this program lasted on my Amiga long enough to write this review, and then went straight into the wastebasket. Now if only they were fluffy bunnies instead of scuttly cockroaches...

Program rating: 5/10
Shudder factor: 10/10

POPPER

Fish disk 899

Popper is a combination library and command which enables you to have menus that pop up under the cursor, wherever it is on the screen, when you press the right mouse button. This is useful if you find yourself cursing every time you have to move the mouse up to the top of the screen to access a menu – especially if you've set the mouse speed very slow to draw accurately or whatever. The program also lets you "tear off" menus, so that they are permanently available. If you do this, they appear as little windows, with the standard close box in the top left hand corner. When whatever program you're running quits, the windows will automatically disappear. (To tear off a menu, hold down the right mouse button to make the pop-up menu bar appear, select the menu and then hold down the left mouse button as well while you drag the menu to its new position. This isn't something that's explained in the documentation, and it took me a while to work it out.)

The only problem with the tear-off menus is that they don't update if a program enables or disables a particular menu command – which could lead to problems if you select a command which wasn't meant to be selectable at that moment. Perhaps a future version of *Popper* will cure that. Regardless, though, this is a clever little utility, and one that I'm sure will find favour with a large number of users.

Program rating: 8/10

TOUCH

Fish disk 900

Touch is an Amiga version of the Unix *Touch* utility. It changes the date-stamp and time-stamp of a specified file to the current date and time – in other words, it makes a file look as if it were created more recently than it actually was. It supports wildcards, so you can "touch" more than one file at a time.

But... why? Can anyone explain why on Earth you'd want to do this? Certainly, I've never spent sleepless nights wishing for such a utility. If anything, it would surely be counter-productive not to be able to rely on your vital date-stamps when you need to find, say, the earliest version of a particular file. For that reason, I'm giving it a...

Program rating: 3/10

VIRUSZ

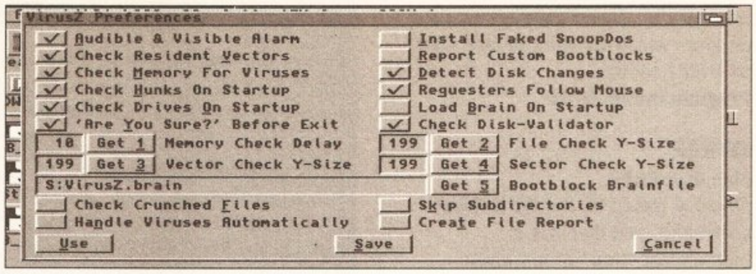
Fish disk 902

I know I keep doing this, but it really is important to have a decent virus killer loaded on your Amiga all the time if you're playing with new shareware and PD software. Most PD houses do check all their disks before they send them out, but it's always possible that something will slip through the net. And with so many Amiga viruses now around, it's getting more and more difficult to guarantee that a disk is virus-free. *VirusZ* is constantly being updated, so do make sure that you get the most recent version; the one on Fish disk 902 is 3.07, and is dated 2 July 1993, so there may well be a more up-to-date version available by the time you read this. Bulletin boards are the best sources of the most recent incarnation, but PD houses shouldn't be too far behind.

VirusZ checks bootblocks of drives, keeps an eye on your Amiga's memory to make sure that a program doesn't place anything there that it shouldn't, and generally looks after your welfare in the background, without you being aware that anything's happening – unless it does find a problem, in which case it cures most troubles automatically.

VirusZ. Get it now!

Program rating: 10/10



VirusZ: protect and survive! A proper virus checker really is vital in this day and age, especially if you use disks from a wide variety of different sources.

QDISK

Fish disk 903

QDisk is an improved, Workbench version of the **Info** command, which lists all the mounted devices (disks), along with their sizes and details of how much free space is available. Clicking on one of the devices listed brings up a window with more detailed information about the selected disk, and the program can be shrunk down to just the menu bar so that you can keep it running all the time without taking up too much space on the Workbench screen.

It's certainly a neat idea, but whether you would actually use it that much is debatable.

Program rating: 7/10

TASKE

Fish disk 903

Moving right along, *TaskE* displays all the tasks running on your Amiga at any given time, together with their priorities, addresses and a couple of other techie details. It's probably of no use to most people, but I'm sure that programmers will find it useful, for sorting out any addressing conflicts or something...

Program rating: 7/10

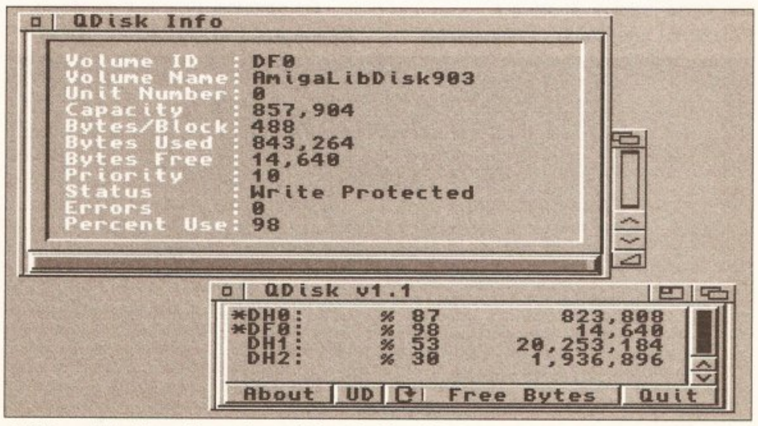
VIEWTEK

Fish disk 903

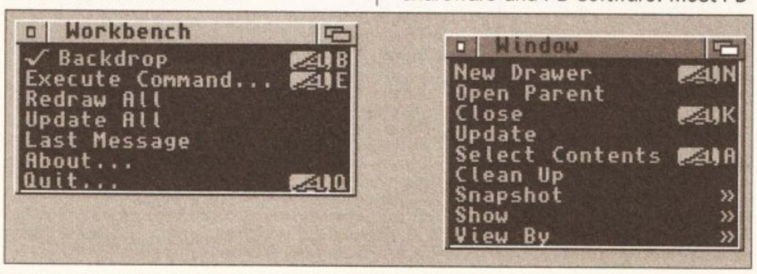
Viewtek is one of the most powerful free image display programs around – and there are plenty of others in competition for the title. Its features include:

- Displays most ILBMs, including 24-bit images
- Displays standard CompuServe GIF-format files
- Displays JPEG images, as long as they are in JFIF
- Displays ANIM7 animations
- Supports SHAM, CTBL and PCHG image files
- Supports ECS and AGA display modes – so it will display 256-colour images on these machines

The package on the disk also includes a version of the program written for GVP's Impact Vision 24 card, so that true 24-bit images can be displayed. The author says that he won't write the program to support ANIM8 animations, since the ANIM7 format is so superior.



QDisk: a Workbench version of the Shell's "info" command. If you've got a burning desire to keep track of all the currently mounted devices, it's for you.



This clever little utility, Popper, enables you to pop up menus wherever your cursor is, and "tear" them off to display them permanently somewhere else.

However, he does helpfully include a program which converts ANIM8 files to ANIM7 format.
Program rating: 9/10

DTREE
Fish disk 905

DTree is based on the PC's **'Tree'** command, and displays a hierarchical "tree" of any given directory or device. The display can include just the sub-directories or any included files, and since it uses standard I/O (it can only be run from the Shell), it supports things like pipes and redirection of output.

DTree isn't the fastest program in the world – expect a lengthy wait if you output the directory structure of a large disk to the screen – but it seems to do its job perfectly well. The only real question is whether anyone will find it particularly useful. I guess that if you need a record of all your files and their locations, then this utility does the job as well as any – and because it supports redirection, you can save the output to a file and then print it out. But with programs like *SID II* around, the uses for a program like *DTree* do seem to be rather limited.
Program rating: 6/10

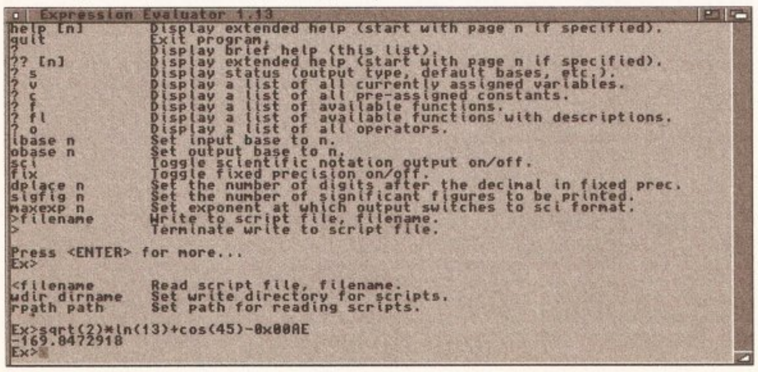
EXPRESSION EDITOR
Fish disk 905

Expression Editor is a program which will deal with just about any mathematical expression you throw at it. Want to add a number in hex to a number in base 25, then take its cosine and display the result to four decimal places in scientific notation in base 18? No problem.

The program works in a simple scrolling window, since it's an Amiga port of Free Software Foundation code. If you haven't come across the FSF, it's an organisation dedicated to making as much software freely available as possible.

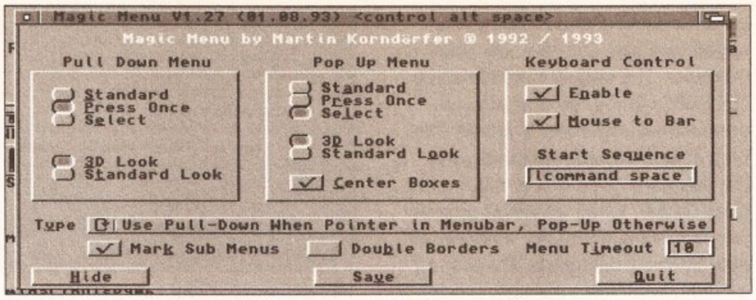
Authors write programs and then make them, and their code, available under a "GNU" licence, which means that anyone can use or modify the code, but anyone who does so must release their resulting efforts under the same licence. There's a PostScript interpreter, a high-quality chess game... all sorts of things available under the general FSF banner, and all of it totally free. That's where *Expression Editor* comes from, and a fine program it is too, if you want such a thing. Since you can assign values to variables, and make the program work from a "script" by using file redirection, you can perform extremely complex calculations using the program.

A must for scientists, students and amateur and professional number-crunchers of all kinds.
Program rating: 8/10



Express yourself (or, to be more precise, calculate some sums) with Expression Evaluator – you name it, the program will work it out for you!

MAGIC MENU
Fish disk 906



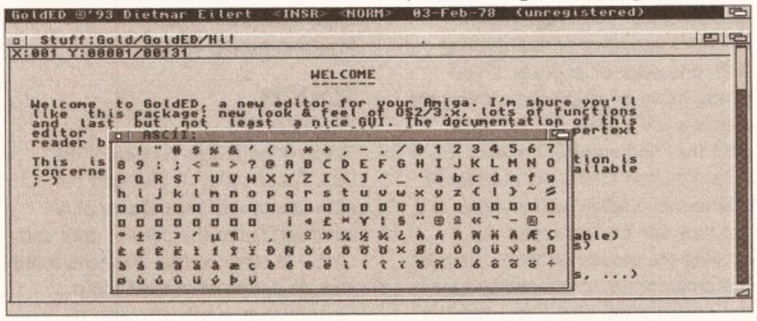
A worthy rival to Popper? Magic Menu offers such complete keyboard control over on-screen menus, it's possible that you'll never need the mouse again!

Magic Menu is another pop-up menu utility, similar to *Popper*. However, it also allows keyboard activation of menus – so there's no need to use the mouse at all, if you prefer. The program also enables you to display the menus in a rather snazzy 3D format, if you're bored with their normal appearance. If you select the correct option, menus will stay selected after you've clicked on them, enabling you to move the mouse down to the option you want without having to hold down the button while you do so – a very useful feature for people who have trouble controlling the mouse.

Running the program is as simple as dropping it in your **WBStartup** drawer so that it kicks off every time you start your Amiga. Then, if you want to use keyboard commands rather than the mouse to access a menu, just hit <Left Amiga>-<spacebar> and the menu pop-up appears for you.

On balance, I'd say that *Magic Menu* wins over *Popper*, its use of keyboard controls and the attractive 3D menus just give it the edge – although it's perfectly possible that you'll find incompatibilities with standard programs while using either of these programs. Many programmers do rather nasty things to get "better" functionality, and that can quite easily cause utilities like this to fall over. Still, if one or both are compatible with the programs that you normally use, then they can be recommended.
Program rating: 8/10

GOLDED
Fish disks 908 and 909



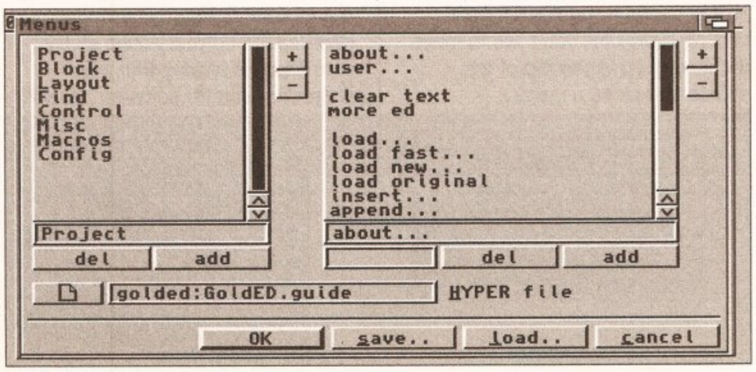
Everything you want from a text editor – and a little bit more. GoldED is a new, very fully-featured program with almost every feature you could need.

GoldED is a new, very fully-functioned text editor. In look and feel it's very much OS 3.0-like, and the range of features is very impressive indeed. They include:
- Macros
- Customisable menus
- ARexx port
- "Automatic phrase completion" – using a dictionary, the program will complete the entry of strings for you, if you wish
- Auto-backup
- Works as a DICE compiler front-end
- "Smart indentation" for programmers
- Automatic checking of parenthesis matching (also for programmers)
- Direct support for XPK compression and decompression

And on, and on, and on. This program really is exceptionally impressive; just when you thought you'd seen it all, *GoldED* redefines what text editors should do.

For example, handy luxuries like an ASCII table come built in; select this from the menu and a window appears with all the available characters displayed; click on one and it's automatically inserted into the document at the current text position. Likewise, a calendar and calculator are available from menu options within the program; and the on-line help is, of course, in *AmigaGuide* format. Or how about the fact that you can move all selected text right by a specified number of spaces, filling those spaces with text if you want? For example, if you're using *GoldED* to reply to electronic mail, where the ">" character is normally used to quote the original message, it's a trivial matter to insert that ">" at the beginning of any lines that you wish.

This program comes on Fish disks 908 and 909; it's too big to fit on one disk (in fact, Fish disk 909 only contains part 2 of the *GoldED* package – there's no room for anything else). It is installed using Commodore's **Install** utility, so you'll need that (Commodore has made this freely distributable, so you shouldn't have any trouble finding it if you don't have Workbench 2.1 or above, in which it is included anyway). You'll also need



Not happy with GoldED's menus for some reason? No problem – the program lets you change them to your own particular personal preference.

AmigaGuide to use the on-line help, although again this is now freely distributable. Finally, be warned that this is version 0.94 of the program, and the author, Dietmar Eilert, says that it's still a beta demonstration release. Still, it's worth checking out if you need a powerful text editor – they don't come much more powerful than *GoldED!*

Program rating: 9/10

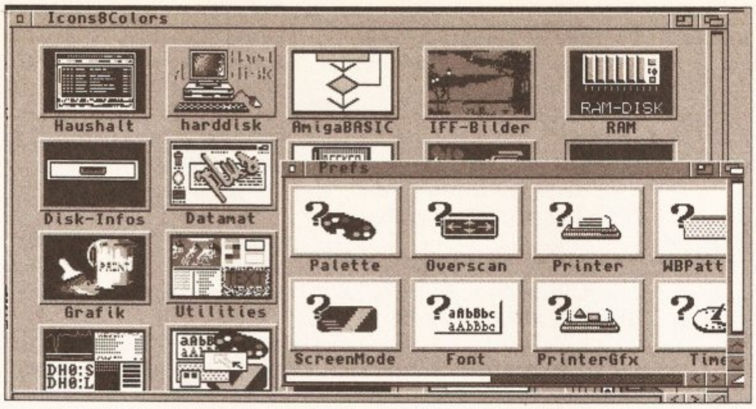
8-COLOUR ICONS

PD Soft disk V1104

This is a disk which is, quite simply, full of colour icons. They have been designed by Ernst Janesch for any Amiga running Workbench 2.0 or above in 8-colour mode, and they are designed to replace the boring old ones that come as standard. They have all been created using *Icon-Edit*, a standard Amiga utility, and *Deluxe Paint IV;* some are icons for specific programs, while others are just plain generic icons for things like disks, drawers and so on.

There's not much more to say, really; if you'd like to see some colour on your screen, this disk can certainly provide that.

Value for money: 7/10



Bored with your dreary old icons? Let PDSoft disk V1104 breath some colour into your Workbench – or maybe you'd prefer just some extra shades of grey.

HDM 1.1

Central Licenseware disk CLU 022

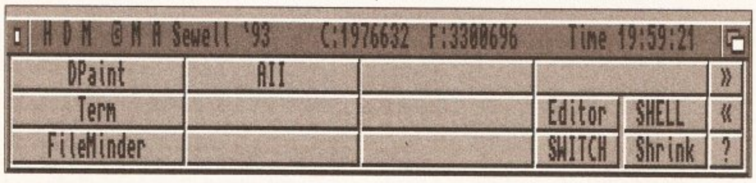
This disk is available from any distributor who is in the Central Licenseware scheme; it costs £3.50. *HDM* is short for Hard Drive Menu, and this is a relatively simple program for launching programs from a "control panel" rather than by burrowing down into the disk itself. Ten buttons are shown at any given time, in what's called a "bank"; each button can be assigned a name and a program to run when it's pressed. A total of five banks can be accessed, via buttons which move from bank to bank, and even if all five are full the program only needs 2.5K to store the data on where to find the programs.

HDM is very well behaved; most of the time you'll leave it in its shrunken form, where just the menu bar is displayed. When you want to access a program, click on it and it expands to full size, sitting neatly at the bottom of the screen. Actually, one of my two complaints with the program is that it does take a couple of seconds to redraw its window and then relocate to the bottom of the display; it first draws itself about a quarter of the way up, which I assume is to take into account any NTSC screen users. But surely the program could check for this before it drew its window in the first place?

The second complaint is that, when setting up the buttons to access programs, the program automatically assumes that all your programs are on the same volume that you started up from. Because the file requester is pretty basic, and doesn't include a "Volumes" button, you have to type in the hard drive name by hand – which is a pain if you're going to be setting up a large number of buttons and, like me, boot off one partition while keeping most of your programs on another. Still, once you've set the program up this isn't a problem.

In use, *HDM* seemed to perform well. I couldn't make it fall over, and it's certainly easier than digging through half a dozen drawers to access a utility. There are plenty of programs like *SID* about which do everything in the world to your hard drive, but it's nice to have a neat little program which does one job, and does it well.

Value for money: 8/10



HDM lurks in a corner in menu-bar form – until you click on it. Then it gives you access to all your applications, wherever on your hard drive they may be.

STARVIEW

PD Soft disk V1109

StarView is an astronomy program supplied on a self-booting disk (if you want to run it from your hard disk, you'll have to copy across the "**hisoftbasic**" library first). And it's really rather good.

Like other such programs, it displays what the night sky should look like (if it ever stops raining and the clouds disappear) at any given date, time and location. Over 850 stars are included, with over 100 named. The program also displays the outlines and names of all 88 constellations, and lets you zoom in on any specific area for a more detailed view. You can find a constellation by name, and the display can be either as a horizon view (that is, you are shown a portion of the sky up to 70 degrees high, from any given direction) or as a "zenith" view, which is a circular view of the sky centred on the point directly above your head. This zenith view can be rather tricky for novices to follow, and the horizon view is much nicer: you get an image of exactly what you should be seeing (except that there are no convenient names and red lines floating around in the real sky).

StarView has been programmed in HiSoft Basic, and is an excellent example of that program's power; I can thoroughly recommend it to any budding Patrick Moores.

Program rating: 9/10

PDSOFT FONT DISKS

PDSoft has released a new 26-disk collection of fonts, available in either Compugraphic or Adobe Type 1 format. Each disk costs £3, or the complete 26-disk set costs £49.99. The fonts are extremely high quality; they range from traditional to... er... *odd*, and include a number which have been around as PD fonts on the Mac for some time. Because they are supplied in either Type 1 or Compugraphic format, you will be able to use them with most page makeup programs – and, in the case of the Compugraphic fonts, in Workbench 2.x or 3.x.

For details of the fonts on each of the disks, write away to PDSoft for one of their leaflets. These fonts are well worth getting; at £3 per disk, you can't go wrong!

Value for money: 10/10 AS



Yes, it's Architect – just one of the fonts available on disk 1 of PDSoft's new budget-priced collection of Compugraphic and Adobe Type 1 typefaces.

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board (BBS) is that often the latest software is uploaded as soon as it's available. On the downside, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the BBS as well).

There is a growing number of BBSs with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a BBS or haven't got a modem, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper,* and there's a full directory overleaf. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and total incompetents which charge more than twice that.

UK PD HOUSES • UK PD HOUSES

***An asterisk by a library's name means see its advert in this issue for further details.**

A1200 Only PD. Contact B J Cowdall, 27 Pheasant Way, Cirencester, Glos. GL7 1BJ.

AMOS PD, 1 Penmynydd Road, Penlan, Swansea, SA5 7EH.

Amiganuts United, 1 Daffern Ave, New Arley, Coventry CV7 8GR.

Amiga Productivity PD Series, 51 Ennors Road, Newquay, Cornwall TR7 1RB. Contact M J Docking.

***Anglia PDL,** 30 Victoria Street, Felixstowe, Suffolk, IP11 7EW, ☎ 0394 283494.

Armchair PD, 180 Blackton Close, Newton Aycliffe, Co Durham DL5 7EY.

Artman, 40 Northwell Gate, Otley, West Yorkshire LS21 2DN. Phone 0943 466476.

Asgard PD, 20 Langdale Drive, Flanshaw, Wakefield WF2 9EW. Phone 0924 363059.

Batty's PD. Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR. ☎ 0604 22456. Life membership £3.99.

Beats Brothers, 6 Brownings Close, Pennington, Lymington, Hampshire SO41 8GX.

Belshaws PD. 55 Baldertongate, Newark, Notts. NG24 1EU, ☎ 0636 72503.

BG PD, 6 Peter Street, Whitehaven, Cumbria CA28 7QB.

Blitterchips, Cliffe House, Primrose Street, Keighley, BD21 4NN, ☎ 0535 667469.

BTK, 7 Callander Road, Catford, London SE6 2QA ☎ 081 473 1650.

Bus Stop PD. Contact Lisa or Cheryl, 6 Smiths Avenue, Marsh, Huddersfield HD3 4AN, ☎ 0484 516941.

C and C PD. Contact Chris Wildman, 3a The Cedars, Tilehurst, Reading, Berks. RG3 6JW, ☎ 0734 411131.

Chris's PD, 22 Merryfields Avenue, Hockley, Essex SS5 5AL.

Colwyn PD. Free, non-profit-making PD, membership £5 per year. Contact Andy Roberts, 17 Gladys Grove, Colwyn Bay, Clwyd LL29 7YB, ☎ 0492 533442.

Computer & Design Services, 24 Blackmoor Croft, Tile Cross, Birmingham B33 0PE. ☎ 021 779 6368

CP PD, 3 Dunedin Crescent, Winshill, Burton on Trent, Staffs. DE15 0EJ, ☎ 0283 516736.

Crazy Joe's, 145 Effingham Street, Rotherham, South Yorks, S65 1BL, ☎ 0709 829286.

Crazy Software PD, 50 Woodville Court, Portobello, Wakefield, West Yorkshire WF2 7DU.

Deja Vu, 7 Hollinbrook, Beech Hill, Wigan WN6 7SG, ☎ 0942 495261.

Diskovery PD, 108 The Avenue, Clayton, Bradford, West Yorkshire BD14 6SJ, ☎ 0274 880066.

Essex Computer Systems, 118 Middle Crockerford, Basildon, Essex, SS16 4JA, ☎ 0268 553963.

Eurodisk PD, PO Box 2, Radlett, Herts WD7 8QL.

***Express PD,** 47 Aberdale Road, West Knighton, Leicester LE2 6GD, ☎ 0533 887061.

George Thompson Services, Bridgegate Centre, Martinfield, Welwyn Garden City, Herts. AL7 1JG, ☎ 0707 391389.

GVB PD, 43 Badger Close, Maidenhead, Berks. SL6 2TE, ☎ 0831 649386.

Highland PD. Free list contains lots of education, business and games disks. Contact David Paulin, 255 Drumrossie Avenue, Inverness IU2 3SX ☎ 0463 242431.

Holmes Brothers Compilations. Contact Craig for monthly compilation disk. 23 Rocester Avenue, Wednesfield, Wolverhampton, West Midlands WV11 3AU. ☎ 0902 733418.

Hornesoft PD. Contact Chris Horne, 23 Stanwell Close, Wincobank, Sheffield S9 1PZ, ☎ 0742 422000.

ICPUG (Independent Commodore Product Users Group), PO Box 1309, London, N3 2UT, ☎ 081 346 0050.

Immediate Arts, 26 Lyndhurst Gardens, Glasgow G20 6QY. ☎ 041 946 5798.

Judge Dredd's PD, 1 Nottingham Road, South Croydon, Surrey CR2 6LN.

Kew=II Collection, PO Box 672, South Croydon, Surrey CR2 9YS, ☎ 081 657 1617.

***KT's PD.** 75 The Drive, Rochford, Essex SS4 1QQ, ☎ 0702 542536.

Langham PD. Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WV8 1PL

Logic PD, 8/5 Glenalmond Court, Sighthill, Edinburgh EH11 4BE.

Magnetic Fields, PO Box 118, Preston, Lancashire PR2 2AW. ☎ 0772 881190

Mega PD, 78 Bockingham Green, Basildon, Essex SS13 1PF. ☎ 0268 559164 / 0621 828527

NBS, 1 Chain Lane, Newport, Isle Of Wight, PO30 5QA, ☎ 0983 529594.

***Network PD & Shareware Library,** Kenmare, Co. Kerry, Eire. ☎ 010 353 64 41603

NJH Computers, 12 Meesons Mead, Rochford, Essex SS4 1RN. ☎ 0702 546796.

Numero Uno. Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP, ☎ 0262 671125.

Orbital Software. Contact A Flowers, 37 The Orchard, Market Deeping, Peterborough, Cambs. PE8 8JR, ☎ 0778 342064.

Pathfinder PD, 41 Marion Street, Bingley, W Yorks. BD16 4NQ, ☎ 0274 565205.

Penguin Public Domain, PO Box 179, Reading, Berkshire RG3 3DD.

***PD Soft,** 1 Bryant Ave, Southend-on-Sea, Essex, SS1 2YD, ☎ 0702 466933.

Riverdene PDL, 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN, ☎ 0734 452416.

Roberta Smith DTP, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6JE, ☎ 081 455 1626.

Scribble PD, 14 Woolner Close, Barham, Suffolk IP6 0DL

***Sector 16,** 160 Hollow Way, Cowley, Oxford, ☎ 0865 774472.

17-Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Phone: 0924 366982

Softville, 35 Market Parade, Havant, Hants PO9 1PY ☎ 0705 498199

Software Expressions, Unit 4, 44 Beauley Road, Southville, Bristol BS3 1PY, ☎ 0272 639593.

Startronics, 4 Arnold Drive, Droylsden, Manchester M35 6RE, ☎ 061 370 9115.

Tazmania PD. Contact M Hewson, 4 Boultham Avenue, Lincoln LN5 7XZ, ☎ 0522 538706 (after 6 pm).

Telescan Computer Services, Handsworth Road, Blackpool FY5 1SB, ☎ 0253 22296.

Trevan Designs Ltd, PO Box 13, Aldershot, Hants. GU12 6YX, ☎ 0483 725905 (note: modem line, not voice).

Vally PD, PO Box 15, Peterlee, Co Durham SR8 1NZ, ☎ 091 587 1195.

Virus Free PD, 31 Farringdon Road, Swindon, Wiltshire SN1 5AR ☎ 0793 512321

***Visage Computers PDL.** 18 Station Road, Ilkeston, Derbyshire DE7 5LD, ☎ 0602 444501.

Your Choice PD Library, 39 Lambton Road, Chorlton-cum-Hardy, Manchester M21 1ZJ. Phone 061 881 8994.

BUYER BEWARE: The inclusion of a PD library in this directory does not imply that *Amiga Shopper* endorses or recommends any PD library in any way. We can accept no responsibility for any dealings you may enter into or for any difficulties you may encounter.

When you write to any of these libraries for a catalogue, include an SAE for its return. Some libraries ask that you send a blank disk as well.

If a library is named in a review, this means that library provided us with the disk reviewed. Given that PD can be freely copied, the same program may well be available legitimately from several libraries.

• If you run a PD library not listed here and wish to be included, or if you want to amend any information given, send full details and a copy of your latest catalogue to:
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LAA 5262	2Mb RAM Module	£85.00
LAA 5210	Developer/Toner Cartridge	£65.00
LAA 5225	OPC Cartridge (Drum)	£89.00
LAA 5312	A4 Paper Tray (100 Sheets)	£35.00
FAX 1200	Ricoh Fax/Modem Software/Firmware	£120.00
MOD 7199	Pace Microlin FX Fax/Data Modem	£180.00
LAA 5279	Ricoh Flash ROM Card (0.5Mb)	£49.00
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Average Street Price (excl. VAT)	£929	£699	£659	£899	£699
Maximum resolution in dots per inch	300 x 300	300 x 300	300 x 300	300 x 300	400 x 400
Windows 3 Driver @ 400 dpi	-	-	-	-	YES
Print Speed	6ppm	6ppm	4ppm	8ppm	6ppm
Straight Paper Path	-	NO	(ONLY FACE UP)	YES	YES
PCL 5 Printer Command Language	-	YES	-	YES	YES
HP-GL/2 Vector Graphics included	YES	YES	-	YES	YES
Resolution Improvement/Enhancement	YES	YES	YES	YES	YES
Standard RAM	1Mb	1Mb	512K	1Mb	2Mb
Full A4/300 dpi graphics with standard RAM	-	-	-	-	YES
Warm Up Time	33 secs	25 secs	<60 secs	60 secs	45 secs
First Page of Text Output		15 secs	31 secs	18 secs	<15 secs
Document Description Language included	-	-	-	-	YES
Flash ROM	-	-	-	-	YES
Flash ROM Upgradeable Firmware	-	-	-	-	YES
PCMCIA Card Slot	-	-	-	-	YES
Scaleable Resident Fonts - in HP LJ III Emulation	0	8	0	8	8
Resident Bit-Mapped Fonts	10	14	2	14	14
AGFA Intellifont Scaleable Font Technology	-	YES	-	YES	YES
HP LaserJet III Emulation Included	-	YES	-	YES	YES
EPSON FX Emulation Included	-	YES	YES	YES	YES
IBM ProPrinter Emulation Included	-	YES	YES	YES	YES
Standard Tray Capacity	200	150	70	200	100
Protective cover on standard tray	YES	-	YES	YES	YES
Cost per copy**	1.9p	2.0p	2.1p	2.2p	1.65p
Min-Max Paper Weight in gsm	60-163	60-157	60-105	60-135	60-169
Able to print on OHP Film	YES	YES	YES	YES	YES
Able to print on 169gsm card (Manual Feed)	-	-	-	-	YES
Standby - Noise Level	38dB(A)	35dB(A)	<43dB(A)	<43dB(A)	<38dB
Printing - Noise Level	50dB(A)	46dB(A)	<53dB(A)	<53dB(A)	<48dB
PC Independent PLAIN PAPER FAX OPTION	-	-	-	-	YES

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- 2400 baud Data modem
- Hayes compatible - UK manufacture
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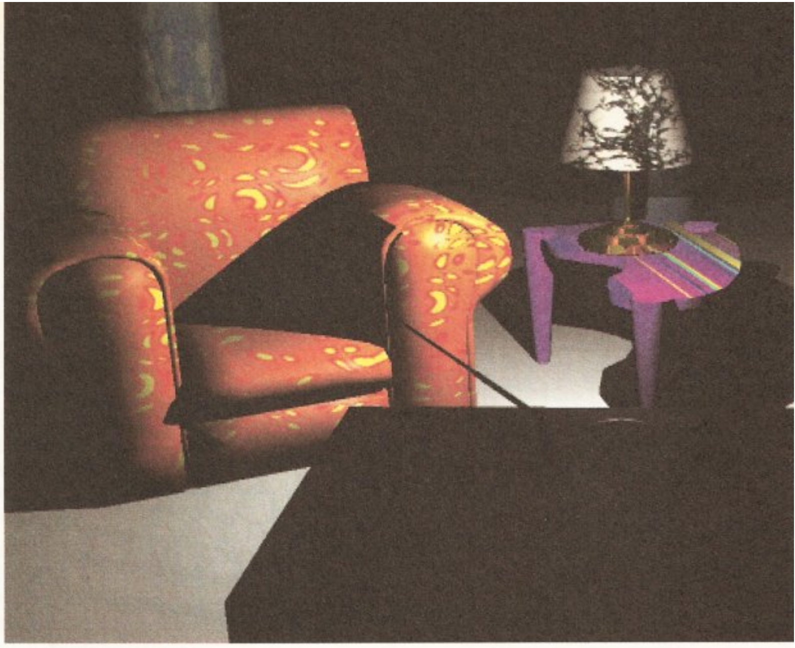
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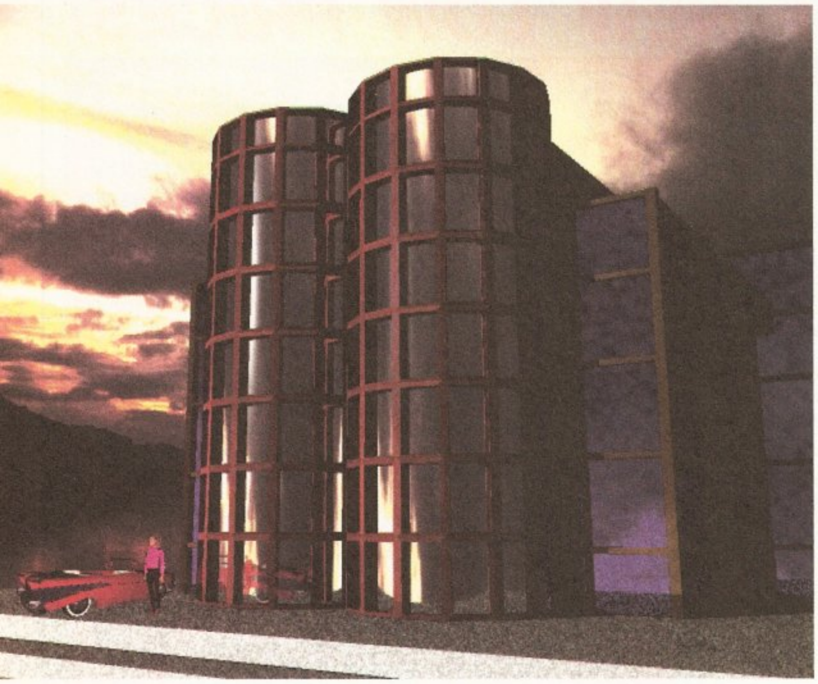
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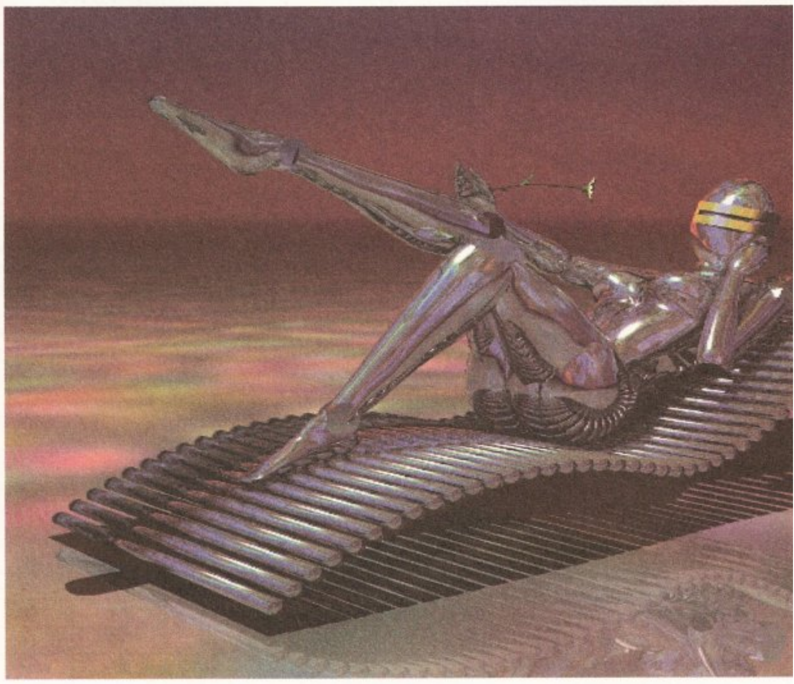
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Amiga Format 53 is on sale from 28 October 1993 until 24 November 1993. Don't miss it!

PRODUCT LOCATOR

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Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. It may not include each and every product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest assured that all the major brands are here. The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it accordingly. This month we're concentrating on commercial software packages. Next month it's public domain.

PAINT PROGRAMS

Product	Supplier	Price	Screen Modes	Max Colours	Overscan	Animation	Rating	Issue
Deluxe Paint 4	Electronic Arts	£90	L/LI/M/H	4096	Yes	Yes	*****	10
Deluxe PhotoLab	Electronic Arts	£130	L/LI/M/H	4096	Yes	No	***	2
DigiPaint 3	Silica Systems	£80	L/LI	4096	Yes	No	****	2
The Graphics Studio	Accolade	£50	L/M	32	No	No	***	2
Personal Paint	MicroPACE	£59.95	L/LI/M/H/S/A	262,000	Yes	Yes	****	26
Photon Paint 2	Microillusions	£90	L/LI	4096	Yes	Yes	*****	2
SpectraColour	HB Marketing	£60	L/LI	4096	Yes	Yes	***	5

L = Low-Res, LI = Low-Res Interlaced, M = Medium, H = High-Res, S = Super Hi-Res, A = AGA

ANIMATION SOFTWARE

Product	Supplier	Price	ANIM Compat	Onion Skin	X-Sheet	Sound	Rating	Issue
Disney Animation Studio	Silica	£80	Yes	Yes	Yes	Yes	****	1
MovieSetter	Silica	£80	No	No	No	Yes	****	14,23
Take-2	Rombo	£49	No	No	Yes	Yes	****	14

SOLID MODELLING / RAY-TRACING

Product	Supplier	Price	Ray Tracing	24-bit	Animation	Bump Maps	Textures	Rating	Issue
Aladdin 4D	MicroPace	£260	No	Yes	Yes	No	Yes	***	25
Draw 4D	Surface UK	£150	No	No	Yes	No	Yes	***	7
Expert 4D Junior	Genisoft	£39.95	Yes	No	No	No	Yes	****	21
Imagine	Silica	£235	Yes	Yes	Yes	No	Yes	*****	4,7,20
Imagine 2	Computech	£270	Yes	Yes	Yes	Yes	Yes	****	14
RayDance	Radiance	£100	Yes	Yes	No	Yes	Yes	***	14
Real 3D 1.4	Alternative Image	£120	Yes	Yes	Yes	Yes	Yes	*****	4,7,20
Sculpt 4D	Alternative Image	£400	Yes	Yes	Yes	No	Yes	*****	7
3D professional	Marcam	£260	Yes	Yes	Yes	No	Yes	***	7

MISC. GRAPHICS

Product	Supplier	Price	Type	Rating	Issue
CineMorph	Silica	£99.95	Morphing program	****	23
Clip Art	Artworks	£6.95	Various IFF clip art files	–	29
FlightPaths	Meridian	£49.95	Animation effects for DPaint	****	26
Fractal Pro	MegageM	US$209.95	Fractal graphics generator	–	29
Genesis	Microillusions	£50	Fractal Landscapes	****	11
MakePath	Meridian	£24.99	Animation editor for VistaPro	****	26
Morph Plus	MicoPace	£180	Morphing program	****	23
Pixel 3D Pro	Micro-PACE	£144.95	Convert bitmaps to solid 3D	***	29
Terraform	Meridian	£34.99	Landscapes editor for VistaPro	****	26
VistaPro	Meridian	£100	Fractal Landscapes	*****	7

IMAGE PROCESSORS

Product	Supplier	Price	24-bit	Max Colours	File Formats	Composition	Colour Control	Rating	Issue
Art Department	Silica	£100	Yes	16.7 m	Many	No	Yes	N/A	–
Art Department Pro	Silica	£200	Yes	16.7 m	Many	Yes	Yes	*****	10
ImageFX	Silica	£269.95	Yes	16.7 m	Many	Yes	Yes	****	27
ImageMaster	Amiga Ctr Scot.	£175	Yes	16.7m	IFF	Yes	Yes	*****	18

PAGE LAYOUT PACKAGES

Product	Supplier	Price	Outline Fonts	Pantone	Postscript	24-bit Col	Colour Sep	Rating	Issue
CityDesk	Precision	£130	No	No	Yes	No	No	N/A	–
PageSetter 2	Silica	£100	Yes	No	No	No	No	N/A	–
PageStream 2.2	Meridian	£69.95	Yes	No	Yes	Yes	Yes	***	2,3
ProPage 4	Silica	£199.95	Yes	Yes	Yes	Yes	Yes	*****	27
Saxon Publisher	Surface UK	£250	Yes	No	Yes	Yes	Yes	***	17

STRUCTURED DRAWING PROGRAMS

Product	Supplier	Price	Bezier Curves	Postscript	Outline Fonts	EPS compat	Rating	Issue
Art Expression	Silica	£150	Yes	Yes	Yes	Yes	****	24
DesignWorks	Silica	£100	Yes	Yes	Yes	No	N/A	–
ProDraw 3.0	Silica	£132	Yes	Yes	Yes	Yes	****	20

CAD PACKAGES

Product	Supplier	Price	DXF Compat	No. Of layers	Vector Fonts	PostScript	Rating	Issue
DynaCADD	Teleware	£650	Yes	256	Yes	Yes	****	3
UltraDesign	Marcam	£200	Yes	128	Yes	Yes	N/A	–
X-CAD 2000	Digital Multimedia	£129	Yes	255	Yes	With util included	N/A	–
X-CAD 3000	Digital MultiMedia	£300	Yes	255	Yes	With util included	N/A	–

UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Ami-Back	Micro-PACE	£69.99	Hard Disk Backup	****	29
Director 2	Alternative Image	£100	Video Presentation scripting language	***	19
Directory Opus 4	Silica	£64.95	Directory utility	*****	28
DOS Lab	GTS	£19.99	AmigaDOS help disk	***	26
Essence	Apex Software	£80	Algorithmic textures for Imagine 2	****	20
Flow 3.0	Silica	£80	Ideas Processor	***	10
GB Route Plus	Complex Computers	£80	Journey Planner	*****	10
GB Route Plus Edit	Complex Computers	£30	Editor For GBRoute	****	10
Hit Kit!	Gajits	£25	Sequences for Sequencer One	***	16
Home Office 2	Gold Disk	£99	Integrated applications software	*****	20
HotLinks	Silica	£70	Add on for PageStream 2.2	**	16
Maple V	Chapman & Hall	CAN$530	Algebra solving utility	****	29
MapMaster	Alternative Image	£54	Image Mapping package	****	14
PowerWaves 3.1	Database	£17.95	Create wave-based 3D objects	****	21
Proper Grammer II	Gordon Harwood	£39.95	Grammar checker	*	30
Real Things	Living Data	£29.95	Animated animal brushes for DPaint	****	20

PRODUCT LOCATOR

Product	Supplier	Price	Type	Rating	Issue
Reverser	Alternative Image	£10	Animation Utility	****	17
SaxonScript	Surface UK	£100	Postscript Interpreter	***	15
Shades	Meridian Software	£60	Gradient fills for PageStream	**	16
Smooth Talker	Zen Computers	£140	Video Prompting package	****	16
SurfaceMaster	Alternative Image	£28	Add on for Imagine	****	14
Touch Typist	Sector Software	£14	Teach yourself touch typing	****	15
Turbo Print Pro	Meridian	£49.95	Enhanced printing	****	11, 12
TypeSmith	Soft Logic	£135	Outline font editor	*****	26
Word Power	Steve Rennocks	£9.95	Crossword solver	–	30

WORD PROCESSORS

Product	Supplier	Price	Spell Checker	Thesaurus	Picture Import	Rating	Issue
Excellence 3	HB Marketing	£79.95	Yes	Yes	Yes	****	25
Final Copy 2	Gordon Harwood	£100	Yes	Yes	Yes	****	25
KindWords 3.0	Silica	£80	Yes	Yes	Yes	**	25
Mini Office 2	Europress	£69	Yes	NO	No	****	17
Pen Pal	Harwoods	£80	Yes	No	Yes	****	6,9,25
Personal Write	MicroPace	£30	No	No	No	*	25
ProWrite 3.2	Silica	£143	Yes	Yes	Yes	***	12
Protext 5.5	Arnor	£150	Yes	Yes	No	*****	6,9,25
Word Perfect	Sentinel	£230	Yes	Yes	No	N/A	–
Wordworth 2	Digita	£129.95	Yes	Yes	Yes	****	21,25

DATABASES

Product	Supplier	Price	Type	Programmable	dBASE Compatible?	Rating	Issue
InterBase	InterActivision	£29.95	Card Index	No	Yes	****	26
PowerBase 3.34	Steve Rennocks	£14.95	Card Index	No	No	****	30
ProData 1.2	Arnor	£100	Card Index	No	Yes	****	9
Mini Office 2	Europress	£69	Card Index	No	No	***	17
SuperBase	Precision	£30	Relational	No	Yes	****	9
SuperBase 2	Precision	£100	Relational	No	Yes	****	9,12
SuperBase Pro 4	Precision	£400	Relational	Yes	Yes	*****	4,9

SPREADSHEETS

Product	Supplier	Price	Lotus Compatibility	Graphs	Rating	Issue
Advantage	Silica	£100	Yes	Yes	****	1,9
DGCalc	Digita	£40	No	No	N/A	–
K-Spread 3	Kuma	£70	Yes	Yes	***	9
K-Spread 4	Kuma	£100	Yes	Yes	****	9
Maxiplan 4	Meridian	£49.95	Yes	Yes	***	18
Mini Office 2	Europress	£69	No	Yes	***	17
ProCalc	Silica	£150	Yes	Yes	N/A	–

MULTIMEDIA

Product	Supplier	Price	Interactive	External Drivers	ARexx	Rating	Issue
AmigaVision	Commodore	£80	Yes	Yes	Yes	N/A	–
CanDo 1.5	Checkmate Digital	£130	Yes	No	Yes	N/A	–
HyperBook	Silica	£100	Yes	No	Yes	****	6
Viva!	MicroDeal	£200	Yes	Yes	No	N/A	–

VIDEO TITLERS

Product	Supplier	Price	Overscan	Transitions	Amiga Fonts	Horiz Crawl	Rating	Issue	
Alternative Scroller	Alternative Image	£50	Yes	No	No	Yes		N/A	–
Broadcast Titler	Meridian	£327.27	Yes	Yes	No	Yes		****	2
Scala 1.1	Silica	£250	Yes	Yes	Yes	No		*****	2
Scala 500	Silica	£100	Yes	Yes	Yes	No		N/A	–
Scala MM200	Scala UK	£395	Yes	Yes	Yes	Yes		*****	21
Video Caption Designer	Maze	£200	Yes	No	Yes	Yes		***	3
Video Ease	Interactive Tchnlgy	£40	Yes	Yes	Yes	Yes		**	11

DESKTOP VIDEO UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Adorage	MicroPace	£79.95	Video Effects System	****	24
AntiA	Zen	£40	Font Enhancer	****	8
Deluxe Video 3	Electronic Arts	£100	Presentation System	N/A	–
Elan Performer 2	Silica	£180	Presentation System	****	11
ShowMaker	Silica	£250	Presentation System	***	10

MIDI SEQUENCERS

Product	Supplier	Price	No. of Tracks	Amiga Smpls	Song Arrange	Rating	Issue
Bars&Pipes Pro	Zone	£200	Unlimited	Yes	Yes	*****	3
KCS 3.5	Zone	£280	48	Yes	Yes	*****	8
Master Tracks	MCM	£200	64	No	Yes	***	–
Music-X	MicroIllusions	£150	256	Yes	No	****	–
Music-X Junior	MicroIllusions	£50	256	Yes	No	****	–
OctaMED Professional	SeaSoft Computing	£30	16	Yes	Yes	****	29
Pro-24	Evenlode	£300	24	No	Yes	***	4
Sequencer One	Gajits	£90	20	Yes	Yes	****	2
Sequencer One Plus	Gajits	£50	32	Yes	Yes	****	16
Tiger Cub	Zone	£100	12	Yes	Yes	****	–
Trax	MCM	£70	64	No	Yes	*****	–

MISC MIDI SOFTWARE

Product	Supplier	Price	Type	Rating	Issue
Audio Sculpture	SMG	£50	Sample Sequencer	**	12
CMPanion	Gajits	£100	Patch Editor	****	6
Caged Artist	Zone	£100	Patch Editor	***	6
Copyist Apprentice	Zone	£100	Score Notation	****	–
Copyist DTP	Zone	£230	Pro Score Notation	****	–
Dr T Boom Box	Zone	£45	Music for beginners	***	21
Mugician	Thalamus	£30	Sample Sequencer	***	–
Quartet	MicroDeal	£50	Sample Sequencer	***	–
SuperJAM!	Blue Ribbon Sound.	£100	Algorithmic Composition	****	15
TechnoSound Turbo 2	New Dimensions	£49.95	Sample editor	****	30
X-Or	Zone	£220	Librarian	****	6

PRODUCT LOCATOR

SOFTWARE

EDUCATIONAL SOFTWARE

Product	Supplier	Price	Type	Rating	Issue
Answer Back Quiz	Kosmos	£20	3 'R's	****	3
Better Maths	School Software	£23	Maths	***	4
Better Spelling	School Software	£23	Writing	****	3
Cave Maze	Coombe Valley	£12	Quiz	***	7
Count & Add	Lander Software	£26	Maths	****	10
Donald's Alphabet Case	Entertainments Int.	£25	Reading	***	2
Early Learning Maths	ESP Software	£20	Maths	***	6
First Letters	Rainbow	£8	Reading	***	7
French Mistress	Kosmos	£20	French	****	4
Fun School 3	Europress	£25	3 'R's	*****	2
Fun School 4	Europress	£25	3 'R's	*****	9
Game, Set & Match	GeniSoft	£21	Maths	**	2
Hooray For Henrietta	Sketlander	£25	Maths	***	2
Kids Type	GeniSoft	£25	Writing	****	2
Learn to Read With Prof	Prisma	£25	Reading	***	2
Let's Spell	Softstuff	£20	Writing	****	2
Magic Maths	School Software	£23	Maths	***	2
Maths Adventure	Kosmos	£26	Maths	***	12
Maths Blaster Plus	Ablac Computec	£40	Maths	***	3
Maths Dragons	Coombe Valley	£12	Maths	***	7
Maths Mania	School Software	£23	Maths	****	3
Mickey's Zoo	Entertainments Int.	£25	Maths	***	2
MicroFrench	LCL	£24	Language Tutor	****	17
Money Matters	Triple 'R' Educational	£20	Money	*****	–
Pepe's Garden	Prisma	£26	3 'R's	****	10
Pick A Puzzle	Deja Vu	£2.50	Jigsaw	***	2
Picture Book	Triple 'R' Education	£20	3 'R's	*****	10
Play It Safe	Deja Vu	£3.50	General	****	2
Puzzle Book 1	Softstuff	£20	3 'R's	****	2
Reasoning With Trolls	Coombe Valley	£15	Quiz	****	8
Sesame Street	Merit Software	£16	Painting	***	2
Shapes & Colours	Rainbow	£8	Basic	****	7
Spell Book	SoftStuff	£8	Writing	****	6
Spell!	Europress	£9	Writing	***	3
Spellbound	Lander Software	£26	Writing	****	10
SpelliCopter	ESP Software	£20	Writing	****	6
The Three Bears	School Software	£23	Reading	***	2
Things To Do With Words	Softstuff	£20	Writing	***	2
Weather Watcher	GeniSoft	£25	Weather	***	4
What is It?	GeniSoft	£20	Geography	****	4

PROGRAMMING LANGUAGES

Product	Supplier	Price	Language	Compiler	Rating	Issue
AMOS	Europress	£50	BASIC	Separate	*****	3,9
AMOS 3D	Europress	£30	BASIC Extension	–	*****	5,7
AMOS Compiler	Europress	£30	Compiler	Yes	****	5,9
AMOS Professional	Europress	£69.95	BASIC	Separate	*****	20
AMOS Pro Compiler	Europress	£34.99	Compiler	–	****	30
AMOS Tome	Deja Vu	£30	BASIC Extension	–	****	11
Aegis Visionary	Precision	£59	Adventure	Yes	***	17
ArgAsm	HB Marketing	£60	Assembly	–	***	9
Aztec C	Precision	£130	C	Yes	****	9
Blitz	Siren Software	£70	BASIC	Yes	***	3,9
Devpac 3	HiSoft	£70	Assembly	–	*****	10,12
Easy AMOS	Europress	£35	BASIC	No	*****	12
GFA BASIC 3.5	GFA Data Media	£50	BASIC	Separate	****	3,9
GFA Compiler	GFA Data Media	£30	Compiler	–	****	3,9
HiSoft BASIC	HiSoft	£50	BASIC	Yes	****	9
HiSpeed Pascal	HiSoft	£100	Pascal	Yes	****	19
Lattice C 5	HiSoft	£230	C	Yes	*****	3,9
M2 Amiga	Real Time Associates	£125	Modula-2	Yes	****	7,9

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Supplier	Telephone
Ablac Computec	0626 331464
Accolade	071 738 1391
Alternative Image	0533 440041
Amiga Centre Scotland	031 557 4242
Arnor	0733 68909
Artworks	0469 588 138
Checkmate Digital	0707 664684
Cloudhall	0604 231211
Commodore	0628 770088
Complex Computers	0706 224531
Computech	0702 206165
Coombe Valley	0626 779695
Deja Vu	0942 495261
Digita	0395 270273
Digital Multimedia	0702 206165
Electronic Arts	0753 549442
Entertainments Int	0268 541212
ESP Software	0702 600557
Europress	051 357 1275
Evenlode SoundWorks	0993 898484
ExpressWorks	0252 726255
Gajits Music Software	061 236 2515
GeniSoft	0753 686000
GFA Data Media	0734 794941
Harwoods	0773 836781
HiSoft	0525 718181
Interactive Technology	0423 501321
Kosmos	0525 53942
Kuma	0734 844335
Lander Software	041 357 1659
Marcam Ltd	071 258 3454
MCM	081 963 0663
MegageM	0101 865 349 1104
Micro-PACE	0753 551 888
Meridian	081 543 3500
Merit Software	0101 214 385 2353
MicroIllusions	0480 496497
New Dimensions	0291 690 933
Omega Projects	0942 682206
Prisma Software	0244 326244
Radiance	0101 408 270 7420
Rainbow	0392 77369
Real Time Associates	081 656 7333
Rombo Productions	0506 466601
Scetlander	041 357 1659
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Triple 'R' Software	0742 780370
Zone	081 7666564

BUYING ADVICE FOR SHOPPERS

Whether you're buying over the phone or at a local store, here's our advice on getting what you want.

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that everything works properly.
- Make sure you have all the necessary leads, manuals or other accessories you should have.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you use to buy, you are entitled to return a product if it fails to meet any one of the following three criteria:

1. The goods must be of "merchantable quality".
2. They must be "as described".
3. They must be fit for the purpose for which they were sold or for the purpose you specified when ordering.

If they fail to satisfy any or all of the criteria, then you are then entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim your money back from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different sources charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit-making operations. AS

BUYING BY MAIL

- **Before you send any money, ring the supplier to confirm that the item you want is in stock and when the delivery is likely to be made. Enquire about returning unwanted goods and the supplier's refund policy. Find out about hidden extras like postage and packing charges, and whether the prices quoted include VAT.**
- **Beware of companies that do not include an address in their adverts.**
- **If ordering goods of more than £100 in total value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.**
- **Always buy from the most recent issue of *Amiga Shopper.***
- **When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier immediately. If something doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.**
- **If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory – check the local council listing).**
- **Always keep records of correspondence with any mail order company you deal with and also make a note of where and when you saw the product advertised. False or misleading advertising is an offence, and suppliers must stick to what they've said in adverts.**

ADVERTISERS INDEX

AMIGA SHOPPER
Issue 32 – December 1993

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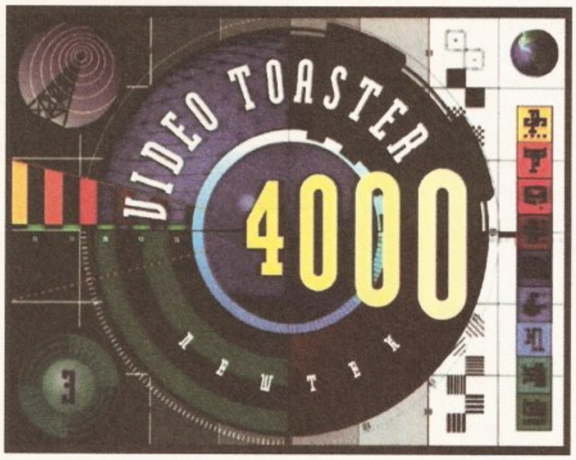
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IN NEXT MONTH'S ISSUE

Are you in for a treat next month? Well yes, you are, actually. Not only are you going to get an issue of *Amiga Shopper* jam-packed with the sort of information that makes it such a lively, vibrant and, well, *informative* read, not only will it be sold with a cover disk jam-packed with the sort of thing that makes cover disks so *full*, but you'll also be getting a cover-mounted booklet thang. We're *so* good to you.

"So what's in the cover-mounted booklet thang?" you're no doubt saying with bated breath and fevered brow. Well, excited ones, it contains excerpts from a forthcoming book on C programming written by your very own me, the editor, Cliff! And on the cover disk there'll be *DICE*, the best shareware Amiga C compiler available. It's a fully-integrated system, and with its help and the tip-top information in the book you'll be writing your own C programs in no time.

But hey, I've been so busy with gross self-publicity that I've yet to tell you what's going to be in the magazine itself. The fact of the matter is, it's going to be pretty damned special, too.



NewTek's Video Toaster, allied with the Prime Image standards converter, is just one of the many, many, many products we'll be giving you the low-down on next month.

It's going to be absolutely bursting at the seams with reviews. You've never seen so many reviews in one place before. We'll be covering both software and hardware, low-cost stuff and the best kit money can buy. We've already got the latest Video Toaster from NewTek lined up, along with a PAL/NTSC converter from Prime Image that could finally establish the Toaster in the UK video market.

You can also expect to see reviews of *Blitz Basic*, *XCAD*, the Picasso II display card, a host of hard drives, a posse of printers, and, as they say in this business, much more. Even as I write, products are streaming in, just waiting to be reviewed and rated.

Next month's issue is going to be an ideal way to help with the Christmas shopping. Maybe you're planning to buy something for an Amiga-owning friend, or perhaps you're looking for that extra-special something to put on that list you'll be sending to Santa Claus yourself – whatever, you can be sure that you'll find plenty of highly desirable hardware and software items reviewed and rated in issue 33 of *Amiga Shopper*, on sale Tuesday 7 December. AS

WIN A YEAR'S FREE SUBSCRIPTION

Who played Dr Richard Kimble in the '60s TV series *The Fugitive*? Send your answers to "Harrison Ford is right out", *Amiga Shopper*, 29 Monmouth Street, Bath BA1 2DL. The closing date is Tuesday 16 October. The first correct answer wins.

Last month's winner was Adam Milner of Brighton. Colonel Korn's first name is Blackie.

YOU'VE WON!

There are five lucky and, dare we say it, exceptionally talented winners of October's *Get The Power* competition. They are: E Dickenson of Croydon, Mark Gilmore of Locks Heath, Hants., Jarmo Willman of Finland, Richard Quinney of Colchester in Essex and Graham Anderson of Glasgow.

Each wins a high-density XL floppy drive, courtesy of those ultra-nice people at Power Computing. Congratulations.

AMIGA SHOPPER

AT-A-GLANCE GUIDE

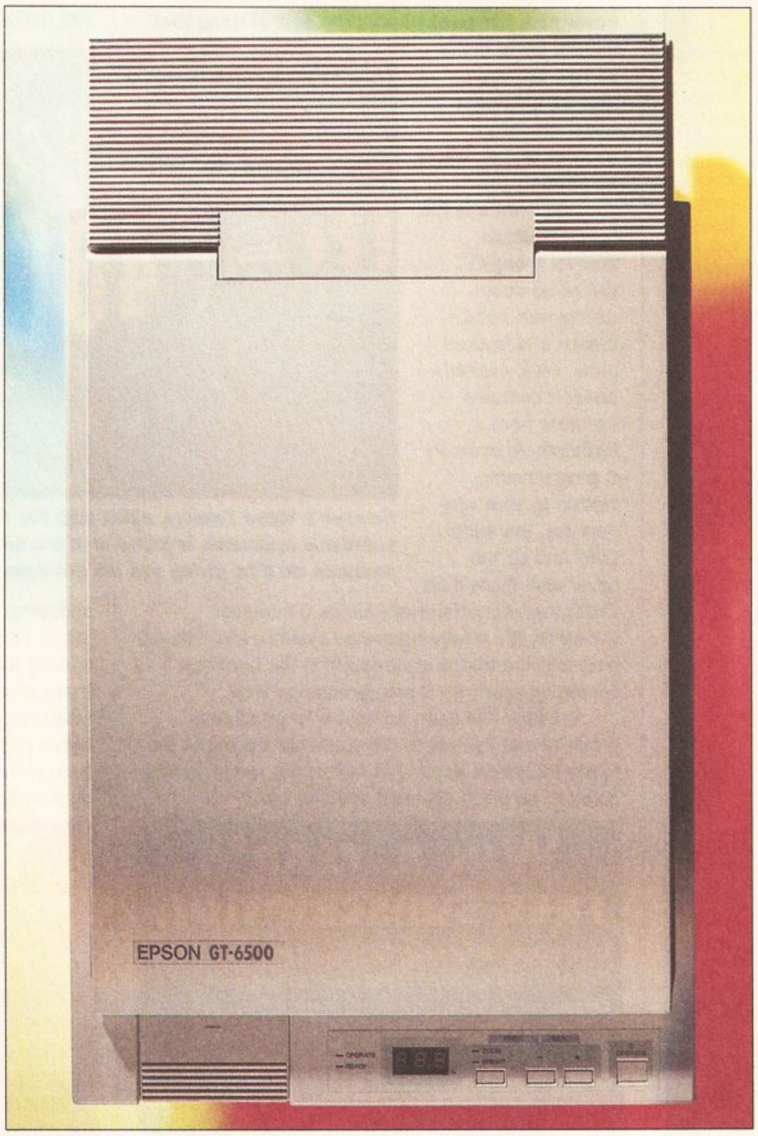
To help you find what you want quickly and easily, here is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 37. The page numbers given are for the first page of the article in which the subject is mentioned.

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

***Amiga Shopper*,**
30 Monmouth Street,
Bath, Avon BA1 2BW.

WIN • WIN • WIN • WIN • WIN • WIN

Scan for free



WIn an Epson GT 6500 P flatbed 24-bit colour scanner, worth £799.

This has got to be one of the best prizes we've ever given away – £800 of scanner that our reviewer reckons is comparable to rival models worth thousands of pounds.

Using hand scanners is all very well, but why bother when you can put your image to be scanned on to a flatbed and let the machine get on with it. Perfect results, in up to 16.8 million colours, every time.

The GT 6500 P, kindly donated by the good folk at Epson, has more features than a scanner with lots of features. It will handle A4 length and US Letter width pages, and it can even be used as a colour photocopier if you connect it up to a 24-pin colour printer or a Hewlett-Packard PaintJet.

It can scan in a variety of resolutions, ranging from 50 to 600 dots per inch. A variable zoom from 50% to 200% enables you to simulate scanning at up to 1,200 dpi. You can also select from seven brightness levels, five sharpness levels, four colour correction settings, six gamma correction settings, three halftoning modes and four built-in dither patterns. The list goes on...

Needless to say, it's a wonderful piece of kit, and using it is simplicity itself. If you are lucky enough to win, please remember that you'll need some software to enable your Amiga to talk to it. The various compatible packages are reviewed and rated in our scanners feature starting on page 14.

If you want to be a contender, have a go at the three ridiculously easy questions in the box. Send your answers written on the back of a postcard (or a sealed envelope), along of course with your name and address, to:

What a scan!
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

The closing date for entries is Friday 3 December. The winner will be the first correct entry drawn from the editor's cardboard box (he *still* can't afford a hat). Send only one entry per household and please state if you don't want your name included on a mailing list.

The competition is not open to employees of Future Publishing or Epson; the editor's decision is final; and the relationship between matter and energy can be described by the equation $E=mc^2$. AS

THE QUESTIONS

1. Which interface method is used to connect the Epson GT 6500 P to the Amiga?
(a) parallel
(b) serial
(c) SCSI

2. If you're going to scan an image in monochrome mode, how many bits per pixel would you use?
(a) 1
(b) 8
(c) 24

3. Who directed the '80s science fiction film *Scanners* (you know, the one with the exploding head)?
(a) Peter Greenaway
(b) Steven Spielberg
(c) David Cronenburg

WIN • WIN • WIN • WIN • WIN • WIN

YOU DO NOT HAVE TO IMAGINE TO CREATE YOUR OWN REALITY



REAL3D V.2............RRP £ 469 Incl.
REAL3D Classic....... RRP £ 99 Incl.

REAL3D is a product of Realsoft OY, Finland.
Marketed by Activa International B.V., P.O. Box 23260, 1100 DT Amsterdam, Holland, TEL. # 31 20 691 1914 FAX. # 31 20 691 1428, BBS. # 31 20 697 1880

Power Computing's latest 32-bit memory expansion for the Amiga 1200 is now available. The PC1208 combines exceptional value with incredible features. The original PC1204 4MB 32-bit memory expansion is still available, and is exceptional value.

SIMM Technology - The PC1208 uses the latest industry standard 32-bit SIMM technology allowing you to use 1MB, 2MB, 4MB and 8MB modules.

Zero Wait State - The PC1208 never leaves the processor waiting around for data, meaning your Amiga 1200 will run at its maximum speed. Simply adding either a PC1204 or PC1208 to your Amiga 1200 will increase its processing speed by 219%.

Real-Time Battery Backed Clock - Allows files to be date-stamped with the correct time and date so that you know exactly when they were created.

Ultra Fast FPU - With the addition of a maths co-processor intensive maths operations will be accelerated by up to fifty times. The PC1208 is the only memory expansion which offers the capability to take either PGA or PLCC type FPU's.

Easy To Fit - Fitted in minutes without the need to remove the computer's case. Does not effect your warranty.

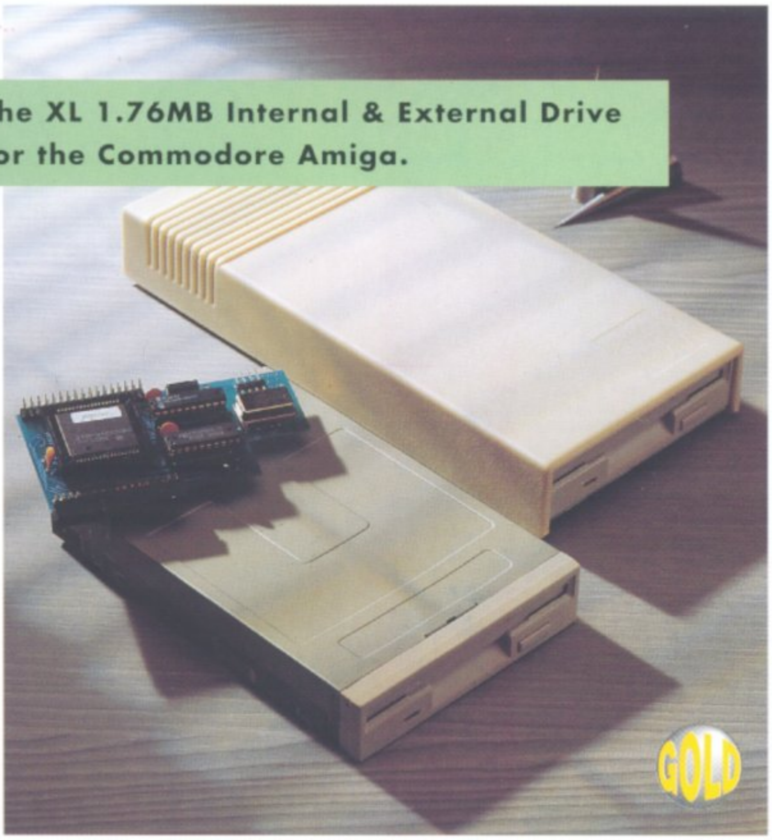
PCMCIA Friendly - Unlike other expansion boards the PC1208 does not conflict with your Amiga 1200's card slot, using the PCMCIA friendly jumper even an 8MB SIMM can be used.

PC1208 Memory Expansion		PC1204 Memory Expansion
PC1208 Bare **£70.00**	**PC1208 FPU's add:**	PC1204 4MB no FPU **£185.95**
PC1208 1MB **£115.00**	20Mhz 68881 **£35**	PC1204 20MHz 68881 **£219.95**
PC1208 2MB **£170.00**	33Mhz 68882 **£80**	PC1204 25MHz 68882 **£279.95**
PC1208 4MB **£270.00**	40Mhz 68882 **£114**	PC1204 33MHz 68882 **£289.95**
PC1208 8MB **£465.00**	50Mhz 68882 **£154**	PC1204 40MHz 68882 **£299.95**
		PC1204 50MHz 68882 **£339.95**

The PC1204 & PC1208 Memory Expansion for the Commodore Amiga 1200.



The XL 1.76MB Internal & External Drive for the Commodore Amiga.



Power Computing's XL 1.76MB Drive* for any Commodore Amiga is now available. The XL Drive includes these many features:

Formats to 1.76MB - Using high density disks you can fit a massive 1.76MB on each disk.

Acts as a standard drive - Insert an 880K Amiga disk and the drive behaves like any other Amiga drive.

Fully compatible - Will read and write disks written on an Amiga 4000 internal high density drive.

Compatible with PC disks** - Also read and write high density PC disks using a suitable device driver.

Compact size - No larger than a standard 880K floppy disk drive.

High quality design - Uses a high quality Sony high density mechanism.

Easy to Fit - The external XL Drive simply plugs into the floppy drive port at the rear of your Amiga. The internal XL Drive simply replaces or adds to your existing drive(s). These drives can be installed in minutes and no soldering is required.

Software compatible - The XL series is fully compatible with all existing hardware and software.

External XL Drive £79.95
Internal XL Drive £75.00
A4000 Internal XL Drive £79.95

*Requires Kickstart 2 or above. **Requires Workbench 2.1 or above.

48Hr delivery **£2.50**, 24Hr delivery **£4.50**
Parcel Post delivery **£1** (Orders under £50 & UK mainland only)
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